Home Computing WEEKLY

An Argus Specialist Publication

No. 86
Oct 30-Nov 5, 1984

45p

Every week: your best buy for software reviews and listings

Bumper treat for VIC-20 owners
Three great programs to type in

WIN
Kokotoni Wilf from Elite—we're giving away over 100 copies!

Reviews
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Programming
Interactive games on your Spectrum

Peripherals review
CheetahSoft Sweet Talker and RAT assessed for you

Plus:
news, letters, software charts...

Listings for Dragon and Spectrum

Can you imagine 4D arrays? We show you how

ZENJI
ANCIPITAL
ICON
KOKOTONI WILF

British v American

British naval forces are pitted against the US marines in an innovative strategy game, ATRAM, which could be set to start a new trend in computer moderated board games.

ATRAM (Advanced Tactical Reconnaissance and Attack Mission) is a tactical board game in which you, as force commander, must position your land-based forces and subsequently direct your airborne and naval forces against your opponent's strategic and tactical targets while simultaneously defending your own.

The role of the computer is to record each manoeuvre and act as an impartial referee. The Spectrum replaces the cribbage type method of scoring which would normally be employed.

Miles Bozeat, creator of ATRAM, is a designer and family man. He has a daughter and two sons and he thought up the game with the intention that

Continued on page 5

Anyone for graphics?

Compunet users should stay glued to their sets to look out for a competition which will enable them to show off their skill in graphics design.

Compunet Teleservices Ltd is offering a Commodore 1791 monitor as first prize to the entrant who designs the most original frame to introduce one of their services. It can be for one of the services already available or one planned for the future.

The monitor is worth over £200 and gives much higher resolution than a normal TV screen. There is also a second prize of £25, as well as £5 for anyone whose frame design is used to introduce a service.

You can also participate in a Christmas card competition: the winning entry will be used as the official Compunet Christmas card and will win £25. Other entries which catch the judges' attention will be

Continued on page 5

48K SINCLAIR ZX SPECTRUM

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Home Computing WEEKLY

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Readers: we welcome your programs, articles and tips

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Leisure software

Mirrorsoft is moving into the home/leisure area with its new Home Discovery Series Five new products are released for BBC, Electron, Commodore 64 and Spectrum

The Joffe Plan is a no-diet system which should help you control your weight Prof Justin Joffe has written a booklet which accompanies the package

Know your own Personality is adapted from the book by Prof Eysenck and Dr Glenn Wilson Are you extroverted or introverted? How emotionally stable are you? Are you tough or tenderminded? These are all areas covered by the 200 questions

Know your own Psi-q assesses your psychic ability with a series of tests and games Master Mind and Quizmaster follow the format of the BBC Mastermind TV series, while Star Seeker and Solar System will teach you about astronomy

Prices are £9 95 for cassette and £12 95 for disc

Mirrorsoft, Holborn Circus,
London EC1P 1DQ

Lower prices

J Morrison (Micros) has announced that all its games will now cost £3 95, while utilities will retail at £7 95, with the exception of Zap (£3 95)

New titles include Lasergates, Skyjoust and Starfighter for the Dragon Jellybones and Nightflight for the Commodore, and The Old House, Knight Errant, Haunted House and Scramble for the Sharp Commodore utilities include Edasm, BasicPlus, Spritemaster and Zip

J Morrison (Micros), 4 Rein Gdns, Tingley, W Yorks WF3 1JR

Spectrum launch

Activision has launched eight cassettes on the Spectrum They are Beamrider, Enduro, HERO, Pitfall II, River Raid, Space Shuttle, Zenji and The Designer's Pencil

Each will cost £7 99, with the exception of Pitfall II (£8.99) and The Designer's Pencil (£9 99)

"Spectrum owners will be pleasantly surprised at the sophistication and long-term entertainment value to be had from our first Sinclair titles," said Geoff Heath, Activision's UK managing director

The Designer's Pencil is a programmable pencil which operates by joystick, and virtually eliminates computer control and complex programming design

Activision, c/o Ray Hodges Assocs, 5/7 Forlease Rd, Maidenhead, Berks SL6 1RP

Polish up your English

Polish up your English with Micro English 'O' level English Language on your computer

New from Ludinski Computer-assisted Learning, Micro English could help you revise or study on your own, and consists of 24 easy to use programs on disc or cassette for BBC/ Electron

At £24 50, the pack consists of two discs, or program, plus audio cassette The audio cassette is intended to help you communicate verbally and in written form with your tutor, the computor

More than 580 questions are featured and can be answered as multiple choice or normal questions

LCL, 26 Avondale Ave, Staines, Middx

Speed and skill

A staggering total of 8,192 screen locations is claimed by Taskset for its new release, Cadcam Warrior Scheduled for launch in mid November, the game will cost £9 95 on cassette and £12 95 on disc

Pre-launch promises include "intricate detail long lasting interest extremely high quality" What you have to do is find your way to Cadcam Control and your rate of progress depends not only on your ability to destroy your opponents and clear all obstacles, but also your speed Each game is claimed to be slightly different from any other

Taskset, 13 High St, Bridlington YO16 4PR

We have lift-off!

First prize in a nationwide competition for schools is a five-day trip to the United States for a team of three students and their teacher Highlight of the trip will be the chance to witness a scheduled shuttle launch from the J F Kennedy space centre in Florida, Miami Also on the agenda is a visit to the EPCOT city of the future in Orlando

The competition, The CUB British Schools Computer Challenge, is being sponsored by Microvitec It's aimed at secondary schools and the Rt Hon Kenneth Baker MP has expressed his support "A challenge for schools of this kind will undoubtedly help build upon the considerable enthusiasm for the use of computers in education which has developed over the last few years," he said

Microvitec managing director Tony Martinez said "We feel our success, coming only four years after the company's formation, is due in no small measure to our performance in the educational sector of the computer market in which 92 per cent of all schools are equipped with our CUB colour monitors The competition is our way of acknowledging such support"

Mr Martinez went on to talk of a challenge between British and American schools, possibly in 1986 Upper age limit for the competition is 16 and entry forms will be distributed shortly before the preliminary rounds begin in November

Microvitec, Futures Way, Bolling Rd, Bradford BD4 7TU

Adventures from books

The Nomad of Time, The Saga of Erik the Viking and The Stainless Steel Rat Saves the World are the titles of three new adventures from Mosaic Publishing

Adapted from books, the games feature striking inlay cards which look more like book covers than software inlays

The Saga of Erik the Viking runs on the Spectrum, BBC and Commodore and costs £9 95 for a boxed pack with booklet and cassette Based on the book by Terry Jones, of Monty Python fame, it has over 200 locations, each illustrated The game was written by Level 9 Computing

The Nomad of Time is based on Michael Moorcock's Oswald Bastable series and runs on the Commodore Price £9 95

The Stainless Steel Rat was written by Shards Software, as was the Nomads of Time, and runs on the Commodore Your mission is to travel through time to save the world

Mosaic Publishing, 187 Upper St, Islington, London N1 1RQ

We have lift-off!

Graphics

From front page

used to stock up the Christmas card shop

Jane Fanbank of Compunet, one of the judges, said "The new system is graphically very exciting We have the whole set of Commodore graphics to use" She added: "The idea came from the Compunet Jungle. That is the area where anyone can upload" She said that the standard was very high indeed

Sue Neville of Compunet said "Compunet is always looking for new designers and any frames used on the system will be paid for"

Jane Fairbank said that Compunet also plans other competitions for the future but details of these have not yet been finalised She said "The system is terrifically interactive so the idea for a competition was fairly obvious"

Closing date for all entries is December 14th The competition is open to anyone who owns or who has access to the system and is not just for computer buffs "We're looking for good, original images, some of which may be quite abstract" said one of the judges

Compunet Teleservices Ltd, Metford Hse, 15/18 Clipstone St, London W1P 5ES

British

From front page

it should be played between lunch and tea-time on a Sunday The game can be saved to tape and the board packed away, so that play can be resumed at a later time

Mr Bozeat said "The purest form of design is airplanes I'm a military aircraft enthusiast — I'm not a warmonger but I love going to air shows The Harrier is the most remarkable aircraft there has ever been It's so elegant, I wish I'd designed it"

He continued "I don't feel like a software author. To me, the computer is a tool" Mr Bozeat thought up the game before the home computer had become popular, and originally the scoring was by peg and hole cribbage board Then, in 1983 the family bought a Spectrum and realised that there was an alternative to laborious scoring

Miles Bozeat realised that his game now had commercial potential and Tony Morris was asked to write the program to accompany the game ATRAM is professionally packaged and masketed and Websters has agreed to act as distributors

Said Mr Bozeat "When using the computer as a database advising options, computing results and updating status, the machine is at its best, a reliable, very capable and friendly tool assisting imaginative and inventive competitors to pit their wits, plan their strategies and steel their nerve as they try to overwhelm the opposition"

Miles Bozeat also believes that with ATRAM the piracy problem has been licked, since the program is useless without the board and pieces

AMSTRAD (£19 95) is being converted for the Commodore 64, and will be launched in the United States. American and British forces both have Harriers, and that's the reason why allied countries are battling it out — not that Mr Bozeat knows something that we don't! "It's no accident that the game is a competition between British and Americans," said Mr Bozeat "There's nothing like a bit of friendly rivalry!"

Websters, Curzon Hse, Middleton Est, Guildford, Surrey GU2 5XW

Making music

Commodore is releasing its music package, Music Maker, which will enable you to use your micro as a musical instrument

Included in the price — £29 95 — is software, a songbook and tutorial material, as well as a 24-key piano style keyboard to fit over your computer keyboard

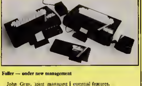
Eight built in voices simulate guitar, piano and synthesiser and different modes can be selected You can create a range of rhythms, from waltz to disco, and play three-note chords

Single step input means that notes can be input using either notes or letters

Commodore, 1 Hunters Way, Weldon, Corby, Northants NN17 1QX

Fuller revived by Nordic

Nordic Keyboards, the company which took over Fuller Micro Systems after it went into liquidation, has announced the launch of the FDS Executive, a replacement keyboard for the Spectrum. The keyboard will be officially launched at ECC Micromarket at Wembley



Fuller — under new management

John Gray, joint managing director of Nordic, said "We believe it's a winner It's technically sound and reasonably priced at £59 95 Far from being a re vamped design, the Executive allows the user to plug the Spectrum straight into the keyboard without having to unscrew the Spectrum case"

Nordic is reported to be spending thousands of pounds in the promotion of the Executive and new packaging and clearer instructions are essential features.

Mr Gray stressed "Although we have acquired the Fuller trademark because we didn't want to lose the identity, we would stress that we didn't take on the delivery and service problems which the old company had We are building stocks of all the products and can deliver in three days"

Nordic Keyboards, Unit 13, Randels Rd, Knowsley Ind Est, Prescott, Merseyside

Quest for the holy grail

Melbourne House's latest release is Sir Lancelot, "a stunning new arcade game for the 16K Spectrum," according to pre-release publicity

You are Sir Lancelot on the quest for the holy grail Perils you encounter include birds and dogs, as well as offbeat figures like Pacman, bouncing balls and a cooking pot with legs

Once you get to the castle you must collect all the items in each of 24 rooms before moving on to reach the treasure

You have four life restorers to help you At £5 95, Sir Lancelot will of course run on both 16K and 48K Spectrums

Melbourne House, Castle Yard Hse, Richmond, Surrey

Wacky games

Micromega has now launched two new releases — Jasper and Jin Genie

Jasper, at £6 95 for the Spectrum, is a "cartoon-style arcade adventure" with 22 screens Collect objects for use later on The story depicts Jasper the rat making his way through the jungle — and Micromega assures us it's wacky

Micromega warns that clever planning, quick thinking and accurate control are your key to success, rather than sheer reaction speed

Jinn Genie, for the Commodore 64 at £8 95, is a four phase game set in Arabia You must free the Golden City from Ifreet the Genie Said Neil Hooper, general manager of Micromega "Having firmly established ourselves in the Spectrum market, it's our intention now to provide Commodore owners with games of equal quality

He went on "We have been looking for the right game for a while, and Jinn Genie is definitely the one We also hope to produce more for the Commodore in the near future — including some possible conversions of our Spectrum successes"

Micromega, Personal Systems and Software, 230-236 Lavender Hill, London SW11 1LE

Space hazards

Mastertronic has announced the release of four new games two are conversions of Commodore 64 games to the Spectrum.

Starace, a new game for the Commodore, has you in charge of a space fighter ship battling through four galaxies to find the planet which will be your new home Aliens, asteroids and fireballs are a few of the hazards in your way

Challenger, new for the BBC, features you as destroyer of aliens and quads Be careful that you don't run out of fuel

Space Walk and BNX Racers

have now been converted for the Spectrum, and Mastertronic states that improvements and refinements have been made.

Mastertronic, Park Lorne, 111 Park Rd, London NW8 7JL

The road to Galilee

Shards Software has been looking to the Bible for inspiration for one of its Christmas titles Galilee, for the Spectrum This text adventure with graphics is set in the heart of the countryside around the Sea of Galilee in the first century Written by the Rev Peter Goodlad, author of Jericho Road, the game has been thoroughly researched Price £5 75

Also from Shards Empire, now on the Commodore 64 (£6 95) The COM empire is your foe, and you must strive to destroy its forces before it conquers the world You are on the defensive. your enemy is both ruthless and aggressive, but you can save the day if you make full use of cunning and tactics You begin with an equal number of territories and the fight is played out on a map of the world, with six scrolling continent maps and eight levels of difficulty

The Pettigrew Chronicles have also been released by Shards for the Commodore and Spectrum, at £9 95 This is an "epic four-part adventure, designed to appeal to the whole family," according to Shards

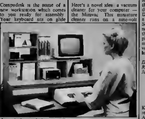
Shards, Ste G, Roycraft Hse, 15 Linton Rd, Barking, Essex

No more clutter!

Compudesk is the name of a new workstation which comes to you ready for assembly Your keyboard sits on glide runners and you can slide it away once you've finished using it There's enough room to store up to 200 discs, while optional doors provide extra security

The Compudesk stands 1269 mm high, and is 915 by 500 mm You can choose either teak or rosewood finish The Compudesk ranges in price from £58 99 to £75 99 depending on additional extras, but post and package costs are extra

Jagger, Forge Lane, Canal Rd, Leeds LS12 2PS



Jagger's Compudesk workstation

Service with a smile?

Chalksoft now provides various services as well as educational software You can swop a Chalksoft cassette in a part-exchange for a disc, if you return it in its original packaging with a cheque for £5

Chalksoft also guarantees replacement of faulty software free of charge, if returned within 28 days together with your proof of purchase After the 28 days have elapsed, Chalksoft will replace your' defective program at a cost of £5

Sampler discs are now available for teachers' use, each disc contains partial review copies of 10 or more programs, and costs £5, and Chalksoft has also published its accessories catalogue

Chalksoft, 37 Willowshw Rd, Worcester WR3 7QP

Pint-sized vacuum cleaner

Here's a novel idea a vacuum cleaner for your computer — the Minivac This miniature cleaner runs on a nine-volt battery or 240-volt adaptor and "uses true vacuum cleaner action to remove minute particles and collect them in a cloth bag, unlike compressed air blowers which simply blow the pollutants into the air", according to O & S Photographic

Two lens-quality fine brush vacuum heads and a vacuum bag are supplied with the cleaner, and you can use a separate attachment to convert it to a blower.

Not only is it useful for removing dust on your keyboard and monitor screen, it can also come in handy when removing carbon dust and paper created during printing.

O & S Photographic, South Block, The Maltings, Sawbridgeworth, Herts

Hand-sized Mini-vac from O & S Photographic

Low cost plotter/printer

Due for November release by Datafax the Sakata SCP-800 colour plotter/printer, which is capable of handling A4 paper as well as a 210 mm paper roll The printer/plotter costs approximately £206 and is compatible with most home computers — BBC, Spectrum, QL, Electron, Commodore 64, VIC-20 and Oric

The SCP-800 is supplied together with a manual, and has the facility to supply screen dumps on Spectrum or BBC Datafax was appointed as a Sakata distributor in September, and this is the first new product to be released since then Datafax claims that the plotter/printer is of high quality and offers you tremendous versatility for graphics and listings

Datafax, Datafax Hse, Bounty Rd, Basingstoke, Hants RG21 3BZ

Scramble for your Amstrad

Kuma has announced the release of its sixth title in its Amstrad range Star Avengers The game is a Scramble type arcade game which features 10 scenarios You're in charge on each level You have the choice of five stages of difficulty, but be warned — they start at difficult and progress to virtually impossible!

Jon Day, Kuma sales manager, said "We're delighted with this version It s a challenging high speed game and makes excellent use of the Amstrad's graphics and sound capabilities Star Avengers is a sure winner and we are confident that it will rapidly become the number one game on the Amstrad"

Star Avengers costs £6.95

Kuma, 12 Horseshoe Park, Pangbourne RG8 7JW

Late news

Henry's House, Soldier of Fortune and Witchswitch are three new releases from English Software All for the Commodore 64, this trio feature Pavloda Fast-Load Henry's House has a royal flavour and involves little Henry romping through his new abode. Price £8 95 Soldier of Fortune is an arcade adventure (£7 95) while Witchswitch (£8 95) is a race against time to save a village from destruction by molten lava.

English Software, Box 43, Manchester M60 3AD

IT'S WHAT YOU'VE BEEN WAITING FOR . . .

"Domark's first venture is fun and the best I've played" **Editor, T.V. GAMER**

"Never seen anything like it" **SUNDAY TIMES.**

"Even if you don't win the £25,000, the game is definitely worth playing and will give you plenty of fun doing so" **Editor, GAMES COMPUTING.**

"Game for a lot" **DAILY MIRROR.**

"In this World's oft fruitless search for value for money, a new software package from Domark shouldn't be ignored" **YOUR SPECTRUM.**

Eureka!

IS HERE

ENJOY YOUR SEARCH FOR THE SECRET TELEPHONE NUMBER

Over 100 copies of Kokotoni Wilf by elite to be won

If you own a Spectrum or Commodore 64 then you can enter our free competition. You could win a personalised copy of Elite's best-seller — Kokotoni Wilf

This week's competition is based on the best-selling game Kokotoni Wilf by Elite Systems.

Kokotoni Wilf is the first release from Elite Systems and is currently doing very well in the software charts. Elite has already planned its second and third titles which will be games based upon two popular TV series The Fall Guy and The Dukes of Hazzard.

Kokotoni Wilf is available for the Spectrum 48K and the Commodore 64 so our competition is open to most computer owners. The hero of the adventure is Kokotoni Wilf and his mission is to seek the lost fragments of the legendary Dragon Amulet. The pieces are strewn throughout time and with the help of the great magician Ulrich, Wilf is able to pass from one time zone to another to carry out his quest.

Wilf starts his adventure in the dangerous era of dinosaurs, millions of years before man walked the earth. When he has collected the parts of the amulet which are to be found in this age Ulrich the old magician opens a glowing portal in time, and Wilf passes through to the next stage of his journey where the Vikings are terrorising the peoples of Europe. There are plenty of perils in the later time zones too, including such hostile adversaries as alien robots.

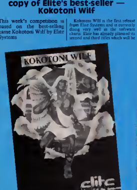
An added advantage that Wilf has over the average hero is that he is endowed with a pair of wings which gives him a much better chance against the many foes he has to face.

Kokotoni Wilf is a multiscreen arcade/adventure game with more than 60 screens and Wilf can travel through six different time zones so there's plenty of variety. All the screens feature hi resolution backgrounds.

The competition format is rather different this week from our usual wordsquare or spot the difference style. The idea of this is to get you involved in the game which is on offer.

The problem which you have to solve is mathematical but don't worry if maths isn't your strong point — we give you some helpful tips to nudge your thinking in the right direction.

So have a go and good luck.



The Competition

Kokotoni Wilf is standing on a hill and in the distance he can see a crossroad. At the centre of this crossroad lies a piece of the Dragon Amulet which Wilf must retrieve. There are four roads leading from the hill to the crossroads and Wilf must decide which is the best one to take so he can reach the fragment of the amulet in the shortest possible time.

- Road A: This road is 2.7 km long but it is quite steep so Wilf can only travel at 5.9 km per hour.
- Road B: This road is 2.9 km long but less steep so Wilf can travel at 6.2 km per hour.
- Road C: This road is 3.7 km long but is easy going and Wilf can travel at 8 km per hour.
- Road D: This is the shortest road and is only 1.4 km long but Wilf can only travel at 3 km per hour as it is over difficult terrain.

You must decide which route Wilf must take to recover the piece of the amulet as quickly as possible.

For those of you whose brains find mental arithmetic a particular strain remember speed divided by distance equals time.

How to enter

Study the problem carefully and when you have arrived at a solution fill in the entry coupon and seal it in an envelope. Remember to write on the back of the envelope which road you think Kokotoni Wilf should take.

Post your entry to Kokotoni Wilf Competition, Home Computing Weekly, No. 1, Golden Square, London W1R 3AB. Entries close at first post on Friday November 16, 1984.

You may enter as many times as you wish, but each entry must be on an official coupon — not a copy — and sealed in a separate envelope. **Important:** please follow carefully the guidelines on entering — incomplete coupons and entries without the solution on the back cannot be considered. If you are a winner, the coupon will be used as a label to send your prize so clear writing is essential.

The rules

Entries will not be accepted from employees of Argus Specialist Publications, Elite Systems and Alabaster Passmore & Sons. This restriction also applies to employees, families and agents of the companies.

The How to Enter section forms part of the rules.

Kokotoni Wilf Competition

Entry Coupon

Name ____________________

Address ____________________

____

____

__________ **post code** __________

Road which Wilf should take __________

Type of computer __________

Complete clearly and fully — if you are a winner this will act as a label for your prize. Post to Kokotoni Wilf Competition, Home Computing Weekly, No 1 Golden Square, London W1R 3AB. Closing date: first post Friday November 16, 1984. Follow carefully the advice in the How to Enter section including writing the road which Wilf should take on the back of the envelope.

Adventure assortment

A wide variety of adventure games to get your brain working. There's excitement and laughs in this batch

Zenji
48K Spectrum
£7.99

Activision, 15 Harley Hse,
Marylebone St, London NW1

Words do not easily spring to mind when trying to describe this game, for I have seen none like it before. It's a maze game, but what a maze game! You have to build the maze yourself.

Reading the enclosed leaflet, I got the impression that the idea stems from a philosophical approach to life. The player is advised to beware desires, and illusions. Further, the object is to make an unbroken path to the Source, learning lessons on the way, otherwise you lose your head, with only four incarnations in reserve.

The game starts with a choice of keyboard or joysticks, and a black mark for not being able to redefine the keyboard. Another black mark because the 'up' key is shown as 'Z', a misprint, it should be '2'.

I have no idea how many variations there are, because I didn't get far, I always ran out of time.

Although it takes getting used to, I don't think you play this game, you experience it. It's worth adding to your collection if you like a game that makes you think. **B.B.**

instructions	90%
playability	100%
graphics	90%
value for money	95%

★ ★ ★ ★ ★

The Dragonstar Trilogy
48K Spectrum
£4.95

Delta 4, The Sheiling, New Rd,
Swanmore, Hants SO3 2PE

This is a three part all text adventure written with the Quill. Set in the quasi-medieval Dungeons and Dragons era, the quest is three fold.

First, find the princess held captive by a dragon, and rescue her by defeating him. She guides you to the Lake of Fire.

After loading the second part, you find yourself at its southren edge with a new quest, to find the Golden Key of Seven.

That done, a message is revealed which launches you on the final conquest of the Dark One, and the destruction of the Dragonstar Crystal.

I didn't feel tempted to sit for hours trying to unravel Dragonstar's secrets. Perhaps it's just me, but it doesn't match other adventures I've seen.

Presenting the user with a series of hurdles loosely linked by descriptions relies overwhelmingly on his desire to beat the programmer. For me this is not enough.

The best adventures should surround you in a land of fantasy, draw you with an intriguing plot, challenge you to defeat wily foes, whilst holding your attention by rewarding you with a little success, and perhaps wit. Very few do. **D.M.**

instructions	50%
playability	90%
graphics	N/A
value for money	100%

★ ★ ★ ★

The Final Mission
48K Spectrum
£5.50

Incentive, 54 London St, Reading RG1 4SQ

'Deep within Vran's Temple you set forth on the Final Mission can you outwit the wandering slime, the five gate guardians, or even Vran himself?' I was reminded of these words, from the cassette inlay, when I was devoured by the slime after scoring 36% of this adventure.

The Final Mission is the last adventure in the Ket trilogy. I had not seen the previous ones, so I was quite keen to get stuck into this one and give a good account of myself.

The excellent, initial hi-res screen leads one to believe that this is going to be a graphic adventure with lots of pretty pictures, but this is not the case. In the 36% I saw, it was text only.

One excellent aspect of this tape, is that it features power load, so it's not long before you are playing the game. The usual adventure commands are present and interpretation of human input is good. It's very user friendly in its attempts to understand you and it poses some interesting problems.

I must work out how to defeat the slime. **M.B.**

instructions	90%
playability	90%
graphics	N/A
value for money	80%

★ ★ ★ ★

The Code
48K Spectrum
£8.95

Soft Concern, PO Box 65,
Warwick CV36 4JY

Initially one is most impressed by the hi-resolution screen at the beginning of this adventure tape.

It's a picture of Bogey (Humphrey Bogart), complete with that and raincoat, and he is illuminated by a sort of art nouveau globe lampshade.

The hi-res screen was, for me, the most memorable moment in this text-only, spy thriller based, adventure game.

Your objective is to penetrate a KGB stronghold and get into the code room to discover the secret code.

Having discovered the secret, you quickly write to Soft Concern Ltd, and if you are the first with the solution, you collect £2,900.

The adventure game itself is a competent rendering, but the lack of a cursor, for human input, I found most annoying. You would expect the high price tag of £8.95 to include a free cursor.

Perhaps the exorbitant price is to cover the cost of having the cassette inlay printed in Russian and to pay out the prize money with. **M.B.**

instructions	90%
playability	70%
graphics	30%
value for money	50%

★ ★

The Quest for the Holy Joystick
48K Spectrum
£4.95

Delta 4, The Sheiling, New Rd,
Swanmore, Hants SO3 2PE

A Quilled all-text adventure to make you laugh! And it works. Humour comes in many varieties, this is the wry, sly in-joke kind!

Via a very clumsy re-defined character set, you are transported to London, the Holy City. From there, a variety of buses and coaches take you all over the country to different well-known software houses.

There you meet not only the authors, often described in less than complimentary terms, but characters and situations from their programs. The latter prove very difficult to get out of.

Perhaps the most amusing thing about this program, to my perverse sense of humour, is the way in which the code transfers you in one fell swoop from Hampshire to America, or from the south coast to Spain! And why not?

There is one snag with 'in' humour. You have to be 'in' to appreciate it! As a result, a market is assured with the staff of Melbourne House, Automata and Dream, though north of Watford sales could be a little thin! If you're a software freak, and know the personalities involved, you'll enjoy this. **D.M.**

instructions	50%
playability	90%
graphics	N/A
value for money	100%

★ ★ ★ ★

Five for the 64

Great games for your Commodore 64 which range from decorating your home to gun-fighting in the wild west

Ancipital
CBM 64
£7.50

Llamasoft, 49 Mount Pleasant,
Tadley Hants RG26 6BN

This is the latest outpouring of Jeff Minter — the man they all hate but love to copy It follows on from the last two games and uses characters from both Our hero is a half man half goat who travels through 100 rooms arranged in a ten by ten array. You are given a map with the game and the status lines on the playing screen give further help

So what makes this game different? Initially there are no exits in any of the rooms You must create them by zapping the weird inhabitants of the rooms. The rooms have an odd system of gravity enabling you to stand on any wall Jumping from wall to wall is a challenge in itself

You need different strategies for different rooms and must collect camels to progress One nasty is Rory the guinea pig Shoot him at your peril

Graphically the game is impeccable and the provision of "Help" for every room is a major advance The soundtrack consists of jungle drums and adds to the excitement

Buy it, you really can't afford to miss this beauty **M W**

instructions	95%
ease of use	95%
graphics	95%
value for money	100%

★ ★ ★ ★ ★

High Noon
CBM 64 £7.90

Ocean, Ocean Hse, 8 Central St,
Manchester M2 5NS

This is a shoot-em-down game with a difference You are the sheriff in a frontier town and judging by the number of villains it's a full time job

The game uses Nova-load and you are serenaded by Gilbert & Sullivan's A Policeman's Lot giving you a foretaste of things to come You are then thrown into the game, patrolling the main street, shooting the baddies before they rob the bank or run off with the saloon girls They also try to shoot you

The main street comprises of the sheriff's office and jail, saloon, bank, hotel and undertaker's, all nicely drawn Whenever you kill a baddie, Rigor Mortis, the undertaker, dashes out and drags the body away He seems immune to the effects of gunfire. If you are shot, he drags you away

Should you survive the first wave, you have a shoot-out for bonus points Subsequent levels have riders on horseback and men with dynamite

In all, nicely executed with good graphics and sound effect If you feel like emulating Gary Cooper, you can do a lot worse than buy this **M.W.**

instructions	90%
ease of use	90%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

Bristles
CBM 64
£8.95

Statesoft, Bessemer Dr, Stevenage, Herts

This game involves the age old pastime of house-painting Your objective is to read six hidden messages You collect a word or group of words appearing at the end of each screen. Eight screens give the full sentence and there are six sentences, one for each skill level

The options include the choice of painter and skill level and number of joysticks The choice of painter involves "Sex select" This only refers to the choice of a male or female name and a corresponding figure on the screen

You guide your painter around the house painting each room as he passes through There are ladders and lifts to help you to each floor You must avoid getting squashed by the lift or knocked down by a flying paint can

Each screen has more obstacles to frustrate you The graphics are good The sound track plays extracts from the Nutcracker Suite and is well executed The sound effects can help, especially when the lights are out and you can't see the walls

Overall, a nice game, which tended, unfortunately, to become boring **M.W.**

instructions	95%
ease of use	80%
graphics	80%
value for money	90%

★ ★ ★ ★

Boulder Dash
CBM 64 £8.95

Statesoft, Bessemer Dr Stevenage, Herts

This is a real winner from stateside and as such should carry health warnings since it is likely to keep you up all night and severely tax your blood pressure and patience

You must guide Rockford underground searching for Jewels and avoiding falling rocks which have a habit of crushing him. If you collect enough jewels and find the exit, you progress to the next level

It's not as easy as you think since it is easy to end up squashed or trapped There are sixteen caves with five skill levels You can start at any one of five caves Each has different features and you must develop new tactics for each Some screens behave differently each time After four screens there is a playable intermission, but I can't comment on these since I haven't managed to reach one

The graphics are first class and the animation and movement of rocks are positively Newtonian This game surpasses all of its genre and is in a class of it's own This is a must for your games collection **M W**

instructions	95%
ease of use	95%
graphics	95%
value for money	95%

★ ★ ★ ★ ★

Pilot-Plus/64
CBM 74 £29.95

John Wiley & Sons, Baffins La,
Chichester, Sussex PO19 1UD

At last, new language packages are appearing for the 64 This package is a nice implementation of Pilot Pilot is a language developed for computer assisted learning, and as such is of value to teachers and educationalists

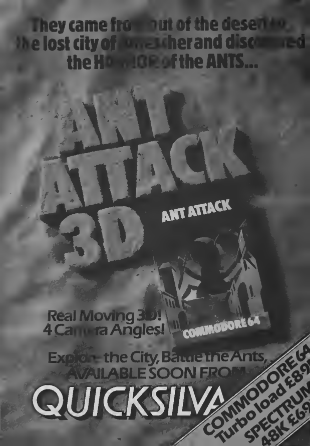
This package offers Pilot with a range of extensions for the use of the 64's sound and other features Hi-resolution graphics are not directly available but low resolution plotting is offered Overall the package offers the features of BASIC plus a lot more A good feature is the editor which includes bi-directional scrolling and many tool kit commands

One bizarre aspect is that using two simple commands you can alternate between Pilot and BASIC, each editor supporting it's own language Hence if you wish to enter a hybrid Pilot/BASIC program you must remember to switch to the right editor at the right time A little confusing, but works well enough

Overall, an excellent package giving a flexible and useful high level language This is enhanced by the ability to combine Pilot/BASIC/machine code I can highly recommend it **A W**

instructions	95%
ease of use	85%
display	N/A
value for money	90%

★ ★ ★ ★ ★



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Hints and Tips

This week we start a regular feature — a page of helpful advice from readers and for readers. Write in to us and share your discoveries with others — there's a software prize for the star letter each week

Slow down!

When listing a program on the Commodore 64 it is possible to slow down the flurry of letters and figures by pressing the CTRL key while the program is being listed

This slows the listing rate down to a speed where it becomes possible to view the program more easily, and is especially useful when searching through long programs

When writing a joystick program for the Commodore 64 it is possible to have keyboard control as well This is achieved by using the joystick port one Simply write the program as if just writing for a joystick

The keys which work in place of the joystick (port one only) are as follows

Joystick move	Key	Command
up	1	up
down	arrow key	down
right	2	right
left	CTRL	left
fire	space	fire

Andrew Clarke, Warwickshire

VIC piano keys

Typing in long programs can be a dreary business So here's a short program to solve that problem and make typing a joy

When this program is run the READY sign should appear after about two seconds Now try pressing a few keys Yes, the VIC is now a piano and the good thing is the program itself does not use up any of the 3.5K which you need for your own programs

If you want to stop this program then press STOP + RESTORE, and to return type SYS672

```
80 FORI=0TO44
90 READA POKE672+I,A
100 NEXTI
110 SYS672 NEW
130 DATA120,169,176,141,20,3,169,2,141,21,3,88,96,0,0,0
140 DATA165,197,201,64,240,12,9,192,141,12,144,169,15,141,14,144
150 DATA200,0,173,14,144,240,3,206,14,144,76,191,234
```

Geoffrey Samson, Bourne, Lincs

Endless lives

Here's a tip for those who are tired of having short games or who want high scores It's for the BBC B's Planetoids by Acornsoft

1 press break
2 type PAGE = &3C00 (return)
3 type LOAD "Planet1" (return)

When loaded

4 type line 150?&276B = &99
5 now RUN it and you have 99 lives!

B Evans, Edwinstowe, Notts

POKEs on VIC-20

Here is a list of POKE commands which may be useful to VIC 20 users

- SYS 64802 or SYS 64824 reset the computer
- POKE 650 128 makes all keys repeat
- This short routine knocks out the runstop and restore keys

```
10  POKE 788,194 REM
    knocks out runstop key
20  POKE 792,91 POKE
    793 255 REM knocks
    out restore key
```

- This routine prevents the program from being listed

```
0 REM [shifted L]
```

- POKE 22,35 prevents program line numbers from listing
- POKE 802,0 POKE 803 0 prevents saving of program Return to normal with POKE 802,243 POKE 803, 243
- POKE 9,x when x=0 to 21 positions cursor along a line
- You can also position the cursor with this routine

```
10 POKE 201 Y REM Y =
   row number
20 POKE 202,X REM X =
   column number
```

- Control cursor speed by POKEing any number into 37879 (0 to 255)
- POKE 198,3 POKE 632, 147 POKE 633,131 is the same as LOAD

These routines should prove useful as they can easily be included in your own programs

A Dunstall, Shoreham-by-Sea

Colourful Dragon

This program enables Dragon users to mix different colours on the hi-res screen You input two colours and then the computer mixes them by drawing lines alternately in each colour The EXEC command in line 110 waits till a key is pressed and then returns to start, mixing two different colours

This is how it works

```
10  clears screen
20  inputs number for first
    colour
30  inputs number for
    second colour
40  sets up hi res screen
50  loop for number of lines
60  sets first colour
70  draws lines in first
    colour
80  sets second colour
90  draws lines one pixel in
    front of previous line
100 loop back for next line
110 waits for key depres-
    sion, then GOTO start
```

This is the program

```
10 CLS
20   INPUT "FIRST
NUMBER" A
30   INPUT "SECOND
NUMBER" B
40 PMODE3 SCREEN1,1
PCLS
50   FORZ=0 TO 192
STEP2
60 COLOUR A
70   LINE (0,Z)-(256,Z),
PSET
80 COLOUR B
90   LINE (0,Z+1)-(256,
Z+1), PSET
100 NEXT Z
110 EXEC41164 GOTO10
```

Andrew J Garvey, Middx

Three colours on Atari

Did you know that the Atari can produce three different colours in graphics mode 0? Well, it can after you set up a display list involving ANTIC — that virtually unknown super graphics chip which is found in all English Ataris

After the following code has been entered your screen will turn black and any characters on the screen will become messy splurges of colour This is because each character has been divided in 4 x 8 matrix, rather than 8 x 8

```
10 DL=PEEK(560)+PEEK
   (561)*256+4
20 FOR I=2 TO 24 POKE
   DL+I,4 NEXT I
```

By rearranging the formation of the pixels within each GR 4 pixel, the three default colours can be produced

As there are only four possible pixel arrangements within each GR 4 pixel, only the colour available in GR 7 can be produced Using the appropriate SET COLOUR or POKE commands these colours can be changed accordingly

James Harrison, Quarn, Leics

Send in your hints and tips to us at Home Computing Weekly, No 1 Golden Square London W1R 3AB A software prize will be awarded to the letter which we judge to be the best of the week

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All versions contain a programme
an audio tape and glossary

(Prices from £12.95)

Versions available from
Boots, Smiths and leading retailers

For further information write to:
Linkword, 41 Walter Road, Swansea.

Noteworthy TI-99/4A £7

Stainless, 10 Alstone Rd, Stockport, Cheshire

This is another of several programs I've reviewed that has been written by R Trueman Like all the others, the graphics are superb and the game fun to play

In this game a smiling little blue creature bounds along the screen To score points he must eat notes that are found along several floors He leaps up to each floor by jumping beneath large power blocks in the ceiling When he reaches the top he exits to the next screen

There are monsters to avoid Using smaller blocks on the ceilings, he may jump over them Further hazards include spikes that point down from the ceilings At intervals these shoot down then retract Should your creature be under one a life is lost and he begins the ascent again, but not from screen one

As each screen is completed the current score is shown This is based on bonuses for the number of screens completed in addition to the number of notes eaten

This needs Extended BASIC

J W

instructions	90%
playability	80%
graphics	85%
value for money	90%

★ ★ ★ ★ ★

Computer Kensington 32K BBC £12.95

Leisure Genius, 3 Montagu Row,
London W1H 1AB

Those who already know how to play Kensington will know what a tactical challenge it is

For those who've never heard of it, Kensington is played on a grid of triangles, squares and hexagons and involves placing your own coloured stones to form certain shapes

A triangle allows you to move one of your opponents stones, which is very handy when a stone is in an offensive position A square allows you to move two stones

Your aim is to surround either one of the two hexagons of your own stone colour, or one of the three neutral hexagons The more alert player will be able to work out that there are seven hexagons overall

Even if you are none the wiser as to how it's played I can tell you that it's an enthralling game

Level one is usually beatable and is the perfect start for novices, level three is the hardest level and will give anyone a run for their money

Playing the computer is fascinating and the game is astoundingly addictive Leisure Genius have produced an extremely well presented and throughly enjoyable game M B

instructions	100%
playability	80%
graphics	80%
value for money	100%

★ ★ ★ ★ ★

From Kensington to Ramagora

Here are a few games for every taste or preference. You can be a hero or a conqueror

Psytraxx 48K Spectrum £6.95

The Edge, 31 Marden La, Covent Gdn, London WC2

The first thing you notice when loading is that the program has a fast loading routine in it This loads the program in less time than normal

Claiming more than a thousand screens, the action takes place inside a computer Now where have I seen that before?

You have to collect master keycards in order to gain access to a CPU, which is at the heart of every computer There are, of course, adversaries, such as flying chips (IC's, transistors and the like, stop me if you've heard it before The action is fast and furious and energy has to be replenished every now and again

I haven't quite figured out the scoring system, maybe that's because I have only just discovered a firing key The press release sheet gives all the controls, with joystick options on screen, but there is no mention of a key to fire a retaliatory blast

In case you are expecting one thousand locations I had better add that they are variations of a maze, with PCB track representing the walls Better than the average game in this class B B

instructions	90%
playability	95%
graphics	100%
value for money	90%

★ ★ ★ ★ ★

Zorakk the Conqueror 32K BBC £7.95

Icon, 65 High St, Gosforth, Tyne & Wear

The inlay looked very inviting, and the instructions seemed promising You have to play the part of Zorakk, and you find the lost Crown of Ultimate Darkness, which lies in three pieces one in each of the medieval lands of Ramagora

On loading, the game display is sluggishly drawn The main feature on screen is the graphical representation of the land you are in, which is split up into 30 squares in grid fashion You move around using the keys N, S, E and W, and there are four buildings which you may visit You may buy warriors, or you can enter a battle

The latter is always welcome because you have to win a battle to stand a chance of obtaining a piece of the crown Whether you win or not is totally random progress can in no way be swayed by the player

Hazards such as starvation the plague and dragons don't improve life

Overall it's not remarkable and will probably be favoured by the younger generation The complete randomness often allows a novice to achieve a higher score than an experienced player M B

instructions	70%
playability	40%
graphics	60%
value for money	45%

★ ★ ★

H.E.R.O. 48K Spectrum £7.99

Activision, 15 Harley Hse, Marylebone Rd, London NW1

Roderick Hero is a bit of a send up of some of those heroes in American comics It appears that volcanic activity has trapped some miners in the mine shafts of Mount Leone Just what they are mining isn't made clear it probably isn't relevant to the game anyway

Like other miner games I have seen, there are different hazards on different levels Unlike the other games, you begin each level with six sticks of dynamite, and of course, the ubiquitous micro laser beam

Again as in other similar games you have a power/energy guage which diminishes as you plumb the depths

Apparently there are spiders shaft bats, miner moths and nesting snakes, some of which I encountered on my travels

The scoring is reasonably straightforward with the highest marks, one thousand, scored when you rescue each miner Of course you can't progress to a lower level if you haven t rescued the miner on your level

It seems there is a special message if you score one million Ye Gods! The graphics are nothing to write home about although the movement is smooth R B

instructions	100%
playability	90%
graphics	75%
value for money	70%

★ ★ ★

Sweet Talker

Cheetah Marketing, 24 Ray St,
London EC1R 3DJ

This is one of the first of the allophone-based speech synthesisers available for the BBC and as such it has to compete directly with Acorn's own Speech Synthesis upgrade As I have used both, I will compare one with the other as far as is necessary

Both systems plug into an area of the BBC main board left free for such upgrades, but while the Acorn system needs to be fitted by a dealer, since there are several modifications to early boards and several components mounted on a small circuit board This plugs directly into one of the empty sockets This is such a simple operation that almost anyone could do it without risk of damage to the computer

Usage of the two devices is very different The Acorn upgrade uses the **SOUND** statement, so you might assume it will be the easier system to use In fact this isn't so The Acorn device is fine if you want to say any of the 185 words in its vocabulary, but if you want to build up your own words you have to do so by chopping those provided into small parts and then building your words up from these parts Using the Cheetah Sweet Talker makes all this effort completely unnecessary because of the allophone system

The theory behind allophones is that all English speech can be broken down into less than 60 component speech parts Once you have all these parts in a device, and a list to choose from, you should be able to create any word in the English language You must first decide which sounds make up a word and then put those sounds together This is done using a very short machine code program and a **DATA** statement, and the demonstration program supplied shows how easy it is

The difference between the two systems is amazing I never dared to try and make new words for the Acorn system but within two minutes I was creating speech from this one The drawback is the quality of speech Acorn's really does sound human whereas Cheetah's is very machine-like — so much so that my son refers to it as Robot Speech

Here is the crunch you can have good quality but a very limited vocabulary or an unlimited vocabulary with poorer quality speech I will settle for the Cheetah everytime We all know that it's a machine so why not admit it and use the system to the full

The most disappointing feature of the whole system is the manual which is nothing more than a single sheet of A4 paper This could be much improved with more detailed information on the use of the pauses and a better fitting diagram Having said that it is adequate I got going in a matter of minutes

D C

Cheetah RAT

Cheetah Marketing, 24 Ray St,
London EC1R 3DJ

Imagine a remote control joystick which is able to perform all the functions of a normal joystick, without a cable connection to your Spectrum computer from a distance up to 12 feet from the screen Put all that together and you have the Cheetah RAT In case you are wondering, RAT stands for Remote Action Transmitter

RAT works in much the same way as a remote TV controller You point the transmitter hand unit in the approximate direction of the plug-in receiver module (both supplied) and a touch sensitive pad on the hand unit sends your commands to the Spectrum A simple one-page set of instructions completes the package

I was disappointed with the quality of construction of the grey/blue hand unit It requires a PP3 battery (not supplied) and when the battery is inserted and the hatch closed my hand unit began to split along its seams The touch pad in the unit I received was beginning to peal away from the rest of the unit

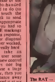
By contrast, the plug in module was sturdily built It included an edge connector on the reverse side of the unit to allow other modules to be added if required

The touch pad on the hand unit is divided into two parts At the front is an orange coloured fire button, while close to the back is a blue clock-face with eight markings, indicating the eight directions of movement This is designed for ease of use by left and right handed players All you need to do (so Cheetah claims) is touch the marking on the clock to send your man in the appropriate direction I found you had to press the N,S,W and E markings quite hard to obtain a response, and the markings for diagonal movement almost never worked, even when I pressed really hard

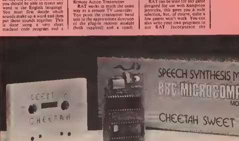
While it would take an experienced joystick user some time to adjust to this new control method, RAT offers one big advantage If you use a large screen TV as monitor, then you can move some distance away from the screen I tested it at six feet, and it worked as well as it did at six inches From 12 feet I couldn't see my screen too well, but it still seemed OK!

RAT can be used for any game designed for use with Kempston joysticks, this gives you a wide selection, but, of course, quite a few games won't work You can also write your own programs to use RAT Incorporate the BASIC line **LET a = IN 31** in your program a will have a value of 0 if no pad is touched, or a value up to 16 depending on which single pad is pressed Similarly in machine code, you would use **In A,31**

RAT is an interesting and novel idea If the touch pads had really been touch sensitive then the RAT's speed might well have been faster than a conventional joystick, as claimed by the manufacturer Perhaps full production versions may offer better sensitivity and a hand unit which does not fall apart! **D N**



The RAT — Cheetah's remote action transmitter



Cheetah Sweet Talker

Three in a row

Variety is the spice of life, and there is plenty of variety with these three programs from Paul Sansom and Paul Newsham. The choice is yours — you can either attack martians, go diving, or just eat eggs and avoid walls

Although you spend most of your time eating eggs in the first game, its actual name is The Walls.

If you have ever fancied going on a totally egg-orientated diet, then this is the game for you, because you walk around the screen eating as many eggs as possible.

However, danger is always around in the form of forks and closing walls, which you have to avoid. All is not lost, however, so don't despair. There is a way to escape a gory death — by getting a key and going through the exit.

Variables

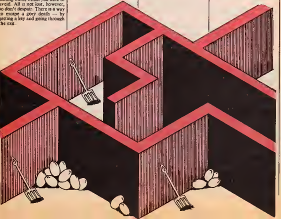
lv	lives left
b and g	time for walls
sr	screen you are on
sc	score
mp	man's position
mc	man's colour
aa and bb	exit position
ab and ba	exit colour
p1, p2, p3, and p4	wall's position

For each egg you eat you will get 10 points, when you retrieve the key you will be awarded 50 points, and if you actually manage to get through the exit — 100 points is awaiting you.

Quick reactions and a keen eye are required for this game, so good luck and get eating.

How it works

7-8	initialises variables and protects graphics
10-41	data for graphics
50-89	set up screen
90-130	movement
135-190	main routine
200 230	end of game
250-255	sound for new screen
300-480	instructions



```
7 POKE56,28 POKE52,28 POKE36878,15 POKE36879,30
8 H=50 G=25 LV=3 SR=1 AA=8174 BB=8175 AB=38894 BA=38895
10 FORI=7168TO7255 READA POKEI,A NEXT
20 DATA116,138,67,153,90,129,67,60,0,64,160,191,165,65,0,0,24,24,60,90,153,24,36
,102
30 DATA0,18,20,9,22,32,64,128,255,255,139,108,156,108,139,255,255,255,81,219,219
,219
40 DATA91,255,231,231,231,0,126,126,126,0,0,219,146,210,82,219,0,0,8,179,170,179
41 DATA170,171,0,0,0,0,119,68,36,20,119,0,0,0,112,64,115,100,80,0
49 GOSUB300
50 PRINT"J" POKE36869,255 MP=7932 MC=MP+30720 IFLV=0THENGOTO200
60 P1=7725 P2=8165 P3=7722 P4=8162
65 FORT=7702TO7723 POKET,6 POKET+30720,2 NEXT
66 FORT=8164TO8185 POKET,6 POKET+30720,2 NEXT
70 FORT=1TO25
75 X=INT(RND(1)*440)+7724
76 POKEX,3 POKEX+30720,3
78 NEXT
80 FORT=1TO25
81 Y=INT(RND(1)*440)+7724
82 POKEY,0 POKEY+30720,7
83 NEXT
84 FORT=1TO2
85 Z=INT(RND(1)*440)+7724
86 POKEZ,1 POKEZ+30720,4
87 NEXT POKEMC,1 POKEMP,32
88 FORT=7724TO8142STEP22 POKET,6 POKET+30720,2 NEXT
89 FORT=7745TO8163STEP22 POKET,6 POKET+30720,2 NEXT
90 GETA$ IFA$="Z"THENPOKEMC,1 POKEMP,32 MP=MP-1 MC=MC-1
110 IFA$="X"THENPOKEMC,1 POKEMP,32 MP=MP+1 MC=MC+1
120 IFA$=":"THENPOKEMC,1 POKEMP,32 MP=MP-22 MC=MC-22
130 IFA$="."THENPOKEMC,1 POKEMP,32 MP=MP+22 MC=MC+22
135 PRINT"■GH$",SC PRINT"■■■■■■■■■IJ$",SR,"■■■■■",LY
170 D=D+1 IFD=GTHENFORW=P1TOP2STEP22 POKEW,6 POKEW+30720,2 NEXT P1=P1+1 P2=P2+1
175 IFD=H THENFORQ=P3 TO P4STEP22 POKEQ,6 POKEQ+30720,2 NEXT P3=P3-1 P4=P4-1 D=0
176 IFPEEK(MP)=3ORPEEK(MP)=6THENLV=LV-1 D=0 POKE36877,195 FORI=1TO500 NEXT POKE3
6877,0 GOTO50
177 IFPEEK(MP)=0THENSC=SC+10 POKE36875,120 FORI=1TO50 NEXT POKE36875,0
178 IFPEEK(MP)=1THENSC=SC+50 POKEAA,4 POKEAB,0 POKEBB,5 POKEBA,0 POKE36876,195 F
ORI=1TO100 NEXT POKE36876,0
179 IFPEEK(MP)=5ORPEEK(MP)=4THENG=G-5 H=H-5:SC=SC+100 D=0 GOSUB250 GOTO50
180 POKEMP,2 POKEMC,0
185 IFSC=>100000THENSC=0
190 GOTO90
200 PRINT"■■■■■■   SAD LUCK,           ■■■YOUR SCORE WAS ",SC
205 PRINT"■■■YOU REACHED SCREEN",SR
210 PRINT"■■■  ANOTHER GO ? (Y/N)"
220 GETB$ IFB$="Y"THENLV=3 SC=0 SR=1 G=25 H=50 GOTO50
225 IFB$<>"N"THENGOTO220
230 PRINT"■■■■■ BYE-BYE!!" POKE36869,240 END
250 FORT=128TO195 POKE36875,T NEXT POKE36875,0 IFG=<0THENG=1
251 IFH=<5THENH=5
255 SR=SR+1 RETURN
300 POKE36869,240 PRINT"■■■■■■THE WALLS.                  ————————" REM COMMODORE
U
310 PRINT"■■  THE OBJECT OF THE      ■GAME, IS TO  WALK      ■AROUND THE SCREEN"
320 PRINT"■■ EATING  AS  MANY,      ■EGGS AS POSSIBLE."
325 PRINT"■■■■PRESS ANY KEY TO CONT."
327 GETA$ IFA$=""THEN327
330 PRINT"■■  HOWEVER, YOU MUST      ■AVOID  THE  FORKS      ■AND , THE CLOSING"
340 PRINT"■         ■■WALLS"
350 PRINT"■■  THE ONLY WAY TO        ■ESCAPE A GORY          ■DEATH, IS  TO"
360 PRINT"■  GET THE KEY  AND       ■GO  THROUGH  THE       ■EXIT."
370 PRINT"■PRESS ANY KEY TO CONT."
375 GETA$ IFA$=""THEN375
380 PRINT"■■■■■  CONTROL YOUR MAN ,     ■USING THE FOLLOWING   ■KEYS -"
390 PRINT"■■■■■■■ ■■I■■■■Z—+—X■■■■I■■."
400 PRINT"■ HIT A KEY TO CONT."
```

```
410 GETA$ IFA$=""THEN410
420 PRINT"]QQQQ■POINTS ARE SCORED IN  QTHE FOLLOWING WAY -"
430 POKE36069,255 PRINT"QQQQ■■■■= 10  POINTS"
440 PRINT"Q■■H■■■= 50  POINTS"
450 PRINT"Q■■DE■■= 100 POINTS"
460 PRINT"QQ■ HIT A KEY TO START."
470 GETA$ IFA$=""THEN470
480 RETURN

READY.
```

From snails to whales with a compact program called Diver. You play the part of Neil the diver, and your aim is to dive the watery depths to claim the gold coins

This may sound easy, but there are problems For instance, your tanks only hold a limited amount of oxygen — if and when this runs out, you lose one of your three lives

When you pick up a gold coin you get 50 points, and you also get a further 50 points plus a bonus for the oxygen left, when you put a coin in your boat at the top of the screen

Man eating sharks are another problem to contend with You can shoot these sharks with your trusty harpoon — but this is not advisable for long periods because your oxygen runs out fast

Variables

dp diver position
dc diver colour
li lives left
d diver s direction
ox oxygen remaining
sc score

How it works

0-10 variables
11-20 screen set-up
20-95 main routine
100-180 fire routine
200-210 pick up coin routine
400-620 end of game

```
0 POKE56,20 POKE52,20 PRINT"]QQ■PLEASE WAIT..." POKE36879,230
5 FORI=7168+32*0TO7160+32*0+7 POKEI,0 NEXT
10 FORI=7160TO7367 READA POKEI,A NEXT
20 DATA0,16,127,252,127,16,0,0,12,114,129,245,132,98,17,12,0,3,7,63,127,15,62,1
21 DATA125,1,2,228,252,246,2,1,0,152,32,31,7,0,112,0,0,20.20,240,255,40,0,0
22 DATA0,0,0,2,255,2,0,0,0,0,0,64,255,64,0,0
23 DATA1,74.146,146,82,42,124,255,1,1,7,63,63,31,0,0
24 DATA128,120,192,254,254,252,0,0,60,110,231,247,247,247,110,60
25 DATA0,0,120,124,254,124,120,0,0,56,56,31,255,12,0,0,0,3,4,240,224,16,14,0
26 DATA0,0,0,0,0,97,150,128,120,67,127,127,63,0,0,0,32,16,16,31,24,240,0,0,1,255
,255
27 DATA255,240,0,0,0,0,0,60,194,2,62,126,254,254,252,224,0,0,0,0,0
20 DATA0,0,0,255,63,31,143,125,120,120,120,254,254,254,252,205,0,0,0,0,40,72,133
,2
29 DATA26,26,62,90,154,42,74,204
30 POKE36069,240 PRINT"]QQOH GUYS,HELP IM BEINGQ HASSLED BY KILLER    QSHARKS!!!
"
40 PRINT"QQYOU PLAY THE PART OF  QNEIL THE ADVENTUROUS  QDIVER,WHO IS ON NIS   Q
HOLIDAY.
50 PRINT"Q YOUR AIM IS TO DIVE  Q THE WATERY DEPTHS TO QCLAIM THE OOLD COINS.
60 PRINT"QPRESS ANY KEY TO CONT.TTT"
70 GETA$ IFA$=""THEN70
00 PRINT"]QTHIS MAY SOUND EASY  QBUT THERE ARE PROBLEMSQ FOR INSTANCE..."
90 PRINT"QQYOUR TANKS ONLY HOLD  QA LIMITED AMOUNT OF   QOXYGEN."
100 PRINT"QIF AND WHEN THIS RUNS  QOUT,YOU LOSE ONE OF   QYOUR THREE LIVES."
110 PRINT"QPRESS ANY KEY TO CONT.TTT"
```

```
120 GETA$:IFA$=""THEN110
130 PRINT"▮▮▮WHEN YOU PICK UP A  ▮GOLD COIN,YOU GET 50  ▮POINTS."
140 PRINT"▮YOU ALSO GET A FURTHER▮50 POINTS PLUS A BONUS▮FOR THE OXYGEN LEFT "
150 PRINT"▮▮WHEN YOU PUT THE COIN ▮IN YOUR BOAT AT THE   ▮TOP OF THE SCREEN."
160 PRINT"▮PRESS ANY KEY TO CONT.TTT"
170 GETA$:IFA$=""THEN170
180 PRINT"▮▮▮WHILE YOU ARE BUSY  ▮ COLLECTING THE COINS  ▮ A SCHOOL OF NASTY "
190 PRINT"▮▮MAN-EATING SHARKS    ▮ TRIES TO DEVOUR YOU."
200 PRINT"▮▮YOU MAY SHOOT THESE  ▮ CREATURES WITH YOUR   ▮ TRUSTY HARPOON."
210 PRINT"▮PRESS ANY KEY TO CONT.TTT"
220 GETA$:IFA$=""THEN220
230 PRINT"▮▮▮THIS IS NOT VERY     ▮ADVISABLE BECAUSE YOUR▮ OXYGEN RUNS OUT FAST!
"
240 PRINT"▮▮USE THESE KEYS -"
250 PRINT"▮▮▮▮ ▮▮|▮▮▮Z-+-X▮▮▮|▮▮.T▮▮▮SPACE=FIRE▮▮"
260 PRINT"▮PRESS ANY KEY TO CONT.TTT"
270 GETA$:IFA$=""THEN270
200 PRINT"▮▮▮LOADING GAME..."
290 POKE198,7:POKE631,76:POKE632,207:POKE633,159:POKE634,13:POKE635,02:POKE636,2
13:POKE637,13

READY.

0 POKE36869,255:GOSUB500:LI=3:POKE36879,30:SC=0
1 POKE36877,0:IFLI=0THEN400
2 POKE650,128:D=4:POKE36070,15:AA=0:OX=100:C=0
10 DP=7725:DC=30445
11 POKE36869,255:PRINT"▮":FORI=0164TO0105:POKEI,0:POKEI+30728,5:NEXT:POKE0150,11
12 FORT=7702TO7723:POKET,23:POKET+30720,6:NEXT:POKE7703,21:POKE7704,22
16 POKE0160,15:POKE0161,17:POKE0162,19:POKE0102,16:POKE0183,10:POKE0104,20:POKE3
8870,7
17 POKE30000,0:POKE30881,0:POKE30882,8:POKE30902,0:POKE30903,0:POKE30904,0
20 D=Q+1:IFQ=3THENB=7745+22*INT(RND(0)*15):POKEB,3:POKEB+30720,0:POKEB-1,2:POKEB
+30719,0:Q=0
27 POKEDP,D:POKEDC,0:POKEDP+1,D+1:POKEDC+1,8
20 POKEDC,1:POKEDP,32:POKEDC+1,1:POKEDP+1,32
30 GETA$:IFA$=":"ANDPEEK(DP-22)<>23THENPOKEDC,1:POKEDP,32:POKEDC+1,1:POKEDP+1,32
:DP=DP-22:DC=DC-22
40 IFA$="."ANDPEEK(DP+22)<>0THENPOKEDC,1:POKEDP,32:POKEDC+1,1:POKEDP+1,32:DP=DP+
22:DC=DC+22
50 IFA$="Z"ANDAA>-1THENPOKEDC,1:POKEDP,32:POKEDC+1,1:POKEDP+1,32:DP=DP-1:DC=DC-1
:D=13:AA=AA-1
60 IFA$="X"ANDAA<15THENPOKEDC,1:POKEDP,32:POKEDC+1,1:POKEDP+1,32:DP=DP+1:DC=DC+1
:D=4:AA=AA+1
70 IFA$=" "ANDDP<0142THENGOSUB100
75 OX=OX-1
00 PRINT"▮▮SC",SC:PRINT"▮▮▮▮▮▮▮▮▮▮K▮";LI:PRINT"▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮OX",OX"▮▮"
02 FORI=3TO21
83 PRINTTAB(1)CHR$(20)
04 NEXT
05 IFPEEK(DP+1)=2ORPEEK(DP)=3ORPEEK(DP)=2OROX=<0THENLI=LI-1:POKE36877,120:FORT=1
TO250:NEXT:GOTO1
86 IFPEEK(DP+1)=11ORPEEK(DP)=11THENPOKE36875,240:FORI=1TO50:NEXT:POKE36875,0:SC=
SC+50:C=1
07 IFPEEK(DP)=21ANDC=1ORPEEK(DP)=22ANDC=1THENGOSUB200
00 IFPEEK(DP)=21ORPEEK(DP)=22THENDP=DP+22:DC=DC+22
09 POKEDP,D:POKEDC,0:POKEDP+1,D+1:POKEDC+1,0
90 IFOX<10THENPOKE30417,1
95 GOTO20
100 IFD=13THENGOTO150
110 IFD=4THENGOTO130
120 POKE36877,120:FORI=1TO50:NEXT:POKE36877,0:RETURN
130 FORI=DP+2TODP+7:IFPEEK(I)=2THENGOTO170
135 POKEI,6:POKEI+30720,0:FORT=1TO10:NEXT:POKEI+30720,1:POKEI,32:NEXT
140 RETURN
150 FORI=DP-1TODP-6STEP-1:IFPEEK(I)=3THENGOTO180
155 POKEI,7:POKEI+30720,0:FORT=1TO10:NEXT:POKEI+30720,1:POKEI,32:NEXT
160 RETURN
```

```
170 FORT=255TO128STEP-2 POKE36874,T NEXT POKE36074,0 SC=SC+10 GOTO135
180 FOPT=255TO128STEP-2 POKE36874,T NEXT POKE36074,0 SC=SC+10 GOTO155
200 FORT=128TO255 POKE36876,T NEXT POKE36876,0
210 C=0 DP=DP+22 DC=DC+22 SC=SC+50 POKE8158,11 POKE30070,7 SC=SC+OX OX=100 RETUR
N
400 PRINT"■■■■HARD LUCK NEIL..."
410 PRINT"■■■YOUR DIVING HOLIDAY   ■■DIDN'T PAY OFF AFTER  ■ALL!!"
420 PRINT"■■■NEVER MIND, YOU STILL ■MANAGED TO GET",SC PRINT"■■POUNDS WORTH OF G
OODS."
430 PRINT"■■■■■PRESS F1 TO PLAY"
440 GETB$ IFB$="■"THENLI=3 SC=0 GOTO10
450 GOTO448
500 PRINT"■■■■PRESS ANY KEY TO PLAY."
510 GETA$ IFA$=""THEN510
520 RETURN

READY.
```

If you prefer Martian blasting to shark shooting, then Martian Attack — another two-part programme — is right up your galaxy

In this game you are in control of a 'MXSP' fighter plane, and you must fly through the city shooting the alien attack waves one-by-one. As you do so, the occasional tractor beam bars your way, and you must shoot one of the photon zappers at either end to destroy it.

If you fail to destroy the zappers, you will be destroyed by the beam.

Things to watch-out for include air mines — they imitate sycrons, but if shot they destroy you. Also, if you fly into an air oune, you will disintegrate

One point to make about this game is that it only just fits into the unexpanded VIC-20, so do not insert any unrequired spaces for the machine will say memory error and you might lose the program

Variables

li lives left
sc score
ps ships position
pc ships colour
q how far you have travelled on that sheet

How it works

5 variables
10-20 set up double size characters
30-40 game set up
55-70 movement of ship and check for fire
75-200 main routine
5000-750 fire routine
800-870 end of game routine
900-1190 instructions

Common to all of these games is that they are over 88 characters long and will have to be abbreviated. The abbreviations are on page 133 and 134 of the user's manual.

```
0 POKE52,28 POKE56,28
10 FORI=7160TO7327 READA POKEI,A NEXT
28 DATA0,195,255,126,126,126.126,36,36,60,24,24,24,24,24,0
21 DATA24,60,126,90,255,231,90,126,60,36,36,72,0,0,0,0
22 DATA129,195,102,60,255,66,255,60,102,195,129,0,0,0,0,0
23 DATA96,97,114,125,125,114,97,96,0,0,0,0,0,0,0,0
24 DATA0,255,0,255,255.0,255,0,0,0,0,0,0,0,0,0
25 DATA6,134,70,190,190,70,134,6,0,0,0,0,0,0,0,0
26 DATA0,0,0,0,0,0,0,0,0,0,24,60,60,24,0,0
27 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20 DATA255,219,165,219,219,165,219,255,255,219,165,219,219,165,219,255
29 DATA129,102,90,36,36,90,102,129,0,0,0,0,0,0,0,0
100 POKE36869,240

READY.

1 GOSUB900
5 RN=30 F=255 LI=3 PS=0 Q=0 SC=0
10 POKE36081,2 POKE36669,255 POKE650,255 POKE36079,24
20 POKE36069 255 POKE36067,47
30 IFLI=0THENPOKE36067,46 POKE36069,240 POKE36865,30 PRINT"■" GOTO800
31 IFRN=<2THENRN=2
32 PRINT"■" POKE36078,15
35 PRINT"■■■■■■■■■■■■■■■■■■■■■"
```

```
40 PP=7756 PC=PP+30720 POKEPP,0 POKEPC,0
50 POKEPC,1 POKEPP,32
55 GETA$ IFA$="Z"ANDPP>7746THENPOKEPC,1 POKEPP,32 PP=PP-1 PC=PC-1
60 IFA$="X"ANDPP<7767THENPOKEPC,1 POKEPP,32 PP=PP+1 PC=PC+1
70 IFA$="M"THEN500
75 PRINT Q=Q+1
76 IFPEEK(PP)=0ORPEEK(PP)=1ORPEEK(PP)=2ORPEEK(PP)=3ORPEEK(PP)=4THENLI=LI-1 GOSUB
750 GOTO30
77 IFPEEK(PP)=9ORPEEK(PP)=5THENLI=LI-1 GOSUB750 GOTO30
78 POKEPP,0 POKEPC,0
80 X=INT(RND(1)*3)+1
81 POKE8164,0 POKE8185,0 POKE38884,0 POKE38905,0
82 IFX=2ORX=3THENPOKE8165,0 POKE8184,0 POKE38885,0 POKE38904,0
83 IFX=3THENPOKE8166,0 POKE8183,0 POKE38886,0 POKE38903,0
85 Y=INT(RND(1)*16)+1 YX=Y+8166 Z=INT(RND(1)*2)+1
87 POKEYX,2 POKEYX+30720,2
90 W=INT(RND(1)*RN)+1
91 IFW=1THENPOKE8167,3 FORT=8168TO8181 POKET,4 POKET+30720,5 NEXT POKE8182,5 POK
E38887,4 POKE38902,4
92 IFW=2THENPOKEYX,9 POKEYX+30720,0
150 IFQ=200THENFORT=120TO255 POKE36076,T NEXT POKE36076,0 Q=0 RN=RN-1 GOTO30
160 IFSC=>1000ANDPS=0THENLI=LI+1 POKE36076 245 FORT=1TO100 NEXT POKE36076,0 PS=
1
200 GOTO50
500 POKEPP,0 POKEPC,0
505 FP=PP+22 FC=PC+22
510 IFPEEK(FP)=0ORPEEK(FP)=4THENG=15 GOTO530
515 IFPEEK(FP)=1THENSC=SC+20 G=15 POKEFC,1 POKEFP,32 POKE36077,195 FORT=1TO50 NE
XT POKE36077,0 GOTO530
517 IFPEEK(FP)=2THENSC=SC+30 G=15 POKEFC,1 POKEFP,32 POKE36077,220 FORT=1TO50 NE
XT POKE36077,0 GOTO530
518 IFPEEK(FP)=3THENGOSUB700 GOTO530
519 IFPEEK(FP)=5THENGOSUB600 GOTO530
520 IFPEEK(FP)=9THENG=0 LI=LI-1 GOSUB750 GOTO30
525 G=G+1 POKEFP,6 POKEFC,0 FORT=1TO10 NEXT POKEFC,1 POKEFP,32 FC=FC+22 FP=FP+22
530 IFG=15THENG=0 POKEPC,1 POKEPP,32 GOTO75
540 GOTO510
600 FORT=FPTOFP-15STEP-1 F=F-8 POKET+30720,1 POKET,32 POKE36874,F NEXT G=15 SC=S
C+100
610 POKE36874,0 F=255
620 RETURN
700 FORT=FPTOFP+15 F=F-8 POKET+30720,1 POKET,32 POKE36874,F NEXT G=15 SC=SC+100
710 POKE36874,0 F=255
720 RETURN
750 FORT=255TO120STEP-5 POKE36077,T NEXT POKE36077,0 RETURN
800 PRINT"]██YOU SCORED",SC
830 PRINT"██WOULD YOU LIKE TO      █HAVE ANOTHER GO ?"
850 GETB$ IFB$="Y"THEN5
860 IFB$="N"THENPRINT"]" END
870 GOTO850
900 PRINT"]███MARTIAN ATTACK                ───── ─────"
910 PRINT"█YOU ARE IN CONTROL OF █AN MXSP FIGHTER PLANE.█YOU MUST SOAR THROUGH"
920 PRINT"█THE CITY SHOOTING THE █ALIEN ATTACK WAVES     █ONE BY ONE.
930 PRINT"██PRESS ANY KEY TO CONT."
940 GETA$ IFA$=""THEN940
950 PRINT"]AS YOU DO SO,THE        █OCCASIONAL TRACTOR     █BEAM BARS YOUR WAY. "
960 PRINT"█YOU MUST SHOOT ONE OF █THE PHOTON ZAPPERS AT █EITHER END TO DESTROY █
IT!"
970 PRINT"█IF YOU FAIL TO DESTROY█THE ZAPPERS,YOU WILL  █BE ANNIHILATED BY THE █
BEAM."
980 PRINT"█PRESS ANY KEY TO CONT▔▔]"
990 GETA$ IFA$=""THEN990
1000 PRINT"]WARNING -█████████──────"
1010 PRINT"█WATCH OUT FOR THE AIR █MINES."
1020 PRINT"█THEY IMITATE SYCRONS, █BUT IF SHOT THEY        █DESTROY YOU."
1030 PRINT"█ALSO,IF YOU FLY INTO █AN AIR MINE YOU         █DISINTIGRATE."
1040 PRINT"█PRESS ANY KEY TO CONT▔▔]"
1050 GETA$ IFA$=""THEN1050
```

```
1060 PRINT"▓▓▓POINTS ARE SCORED IN ▓   THE FOLLOWING      ▓      WAY -"
1070 POKE36869,255 PRINT"▓▓▓E▓▓  SYCRONS =30 POINTS"
1080 PRINT"▓B▓▓C▓▓MALANIUMS =30 POINTS"
1090 PRINT"▓FH▓▓TRACTOR =100POINTS"
1100 PRINT"▓▓▓▓BONUS SHIP AT 10000"
1110 PRINT"▓▓▓PRESS ANY KEY TO CONT."
1120 GETA$ IFA$=""THEN1120
1140 PRINT"▓▓▓▓Z = LEFT" PRINT"▓▓▓K = RIGHT" PRINT"▓▓▓M = FIRE"
1170 PRINT"▓▓▓▓PRESS A KEY TO BEGIN"
1180 GETA$ IFA$=""THEN1180
1190 RETURN

READY.
```

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Can you imagine 4D arrays? We show you how

Four-dimensional arrays are hard to visualise. Graham Kendall explains the logic behind the fourth, fifth and even sixth dimension. Even novices should catch on

Recently some colleagues and I were discussing arrays, and how many dimensions you could actually **DIM**. We started to put all sorts of shapes and figures on a whiteboard in an attempt to represent how the computer actually sees the array. We didn't find much trouble with a single variable or with a one-dimensional array, but when it came to a four-dimensional array we ran into problems. Other 'experts' put their heads round the door, saying "What're you doing? Drawing four dimensional arrays — that's easy. Give me the pen" Quarter of an hour later they would look at their handiwork, hand the pen over to somebody else and walk out confused and baffled.

We reasoned that if you can't imagine a four-dimensional array, let alone draw one, how does a computer set one up and access it? What's more, how does it handle a five- or six-dimensional array?

This is how we've come to understand it. If we start off with a single variable A, and we type **A=10** the computer will set up a box called A and inside this box it will store the number 10.

If instead we type **DIM A(3)** the computer sets up three locations (boxes, Fig 1 called A(1), A(2) and A(3) (assuming the computer starts numbering arrays from 1 and not 0). We can access these locations by typing **A(1)=10** or by putting a variable inside the brackets, e.g. **A(I)=10**

If we dimensioned an array with **DIM A(3,3)** the computer sets up nine locations (Fig 2). In order to access any of these locations you must specify the row followed by the column. Thus, if you type A(2,3) it will access the second row and the third column (see asterix).

With three-dimensional arrays, if we type **DIM A(3,3,3)** this will set up 27 locations (3x3x3). Imagine a box or a Rubic's cube with nine faces on each side, that's what we've just set up (Fig 3). To access this box we must specify not only row and column but also depth. So if we type **A(1,3,3)** we are accessing the first row, third column and third depth (see asterix).

A three dimensional array is a way of accessing something in three different ways: firstly, left and right, secondly, up and down and thirdly, backwards and forwards. Left and right gives us the rows, up and down the columns and backwards and forwards the depth. This can be drawn (Fig 3).

But if you want to add another dimension to your drawing you can't — any line you draw will always be in one of the other dimensions. We are faced with the problem of imagining a four-dimensional array and subsequently, realising how the computer stores and accesses it.

Look at it this way. **DIM A(3,3,3,2)** sets up a four-dimensional array. In reality it sets up two three-dimensional arrays (Fig 4). The last parameter dictates how many three-dimensional arrays are to be set up, thus **DIM A(3,3,3,2)** sets up two three-dimensional arrays giving 54 possible locations (3x3x3x2) while **DIM A(3,3,3,7)** sets up seven three-dimensional arrays giving 189 possible locations (3x3x3x7).

In a four-dimensional array the first three parameters relate to row, column and depth, while the fourth parameter relates to which three-dimensional array you wish to access. So **A(3,3,3,1)** would access the asterix in Fig 4 whereas **A(3,3,3,2)** would access the percentage sign. A five-dimensional array **DIM A(3,3,3,3,3)** sets up 243 locations (3x3x3x3x3). Think of this as nine three-dimensional arrays (Fig 5). The computer accesses this by row, column, depth, sub-set and array within sub-set.

Thus if you type **A(3,3,3,2,1)** it accesses row 3, column 3, depth 3, sub-set 2, and array 1 within that sub-set. In this way **A (3,3,3,2,1)** would access the

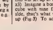


Fig. 1 One-dimensional array

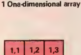


Fig. 2 Two-dimensional array

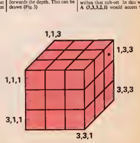


Fig. 3 Three-dimensional array

asterix in Fig 5, and **A(3,3,3,3, 2)** would access the percentage sign

Now **DIM A(3,3,3,3,3)** gives us nine three-dimensional arrays, which means 243 possible locations (3x3x3x3x3), but if we **DIM A(3,3,3,9)** this also gives us nine three-dimensional arrays and thus 243 locations If this is the case why do we need more than four-dimensional arrays?

We'll leave you to puzzle that one out for yourselves By the way, if you find out, could you let us know please?

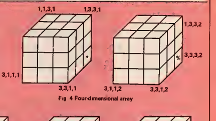

1,1,3,1
1,3,3,1
1,3,3,2
*
%
3,3,3,2
3,1,1,1
3,3,1,1
3,1,1,2
3,3,1,2

Fig 4 Four-dimensional array

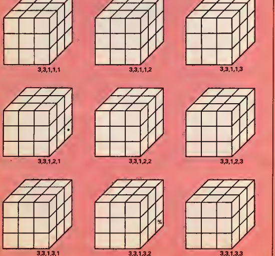

3,3,1,1,1
3,3,1,1,2
3,3,1,1,3
*
3,3,1,2,1
3,3,1,2,2
3,3,1,2,3
3,3,1,3,1
%
3,3,1,3,2
3,3,1,3,3

Fig. 5 Five-dimensional array

The army game

In this program from J D Bateman — a General has to make his way back to camp, but rebelling soldiers make life difficult

The General does not necessarily rule OK with this game which shows how the Dragon's low resolution graphics can easily be used for board games.

The program is based on a game of strategy for two players one assumes the role of General, the other the role of the rebelling soldiers The General is to reach the safety of the camp or kill enough soldiers so as to make defeat impossible.

The aim of the soldiers is to surround the General and prevent him from reaching the camp and forcing him to surrender.

Variables

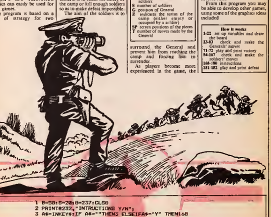
A,E	values poked to give an on-screen score of remaining soldiers
S	number of soldiers
G	position of General
Z	indicates the status of the camp (either empty or occupied by a soldier)
SP	screen positions of the pieces
T	number of moves made by the General

As players become more experienced in the game, the General is invariably forced to surrender Players therefore usually play one game then reverse roles

From this program you may be able to develop other games, using some of the graphics ideas included

How it works

1-22	set up variables and draw the board
23-83	check and make the Generals' moves
71-72	play and print victory
84-167	check and make the soldiers' moves
168-180	instructions
181 182	play and print defeat



```
1 B=58:S=20:G=237:CLS8
2 PRINT@232,"INTRUCTIONS Y/N";
3 A$=INKEY$:IF A$=""THEN3 ELSEIFA$="Y" THEN168
4 CLS0:POKE1035,60:POKE1045,62:PRINT@12,"rebellion";
5 FOR X=67 TO 91:PRINT@X,CHR$(191);:NEXT
6 FOR X=99 TO 355 STEP32:PRINT@X,CHR$(191);:NEXT
7 FOR X=355 TO 379:PRINT@X,CHR$(191);:NEXT
8 FOR X=379 TO 123 STEP-32:PRINT@X,CHR$(191);:NEXT
```

```
9 PRINT@164,"a";:PRINT@186,"a";
10 PRINT@196,"b";:PRINT@218,"b";
11 PRINT@228,"c";:PRINT@250,"c";
12 PRINT@260,"d";:PRINT@282,"d";
13 PRINT@292,"e";:PRINT@314,"e";
14 POKE1127,49:POKE1129,50:POKE1131,51:POKE1133,52:POKE1135,53:POKE1137,54:POKE1
139,55:POKE1141,56:POKE1143,57
15 FOR X=167 TO 179 STEP2:POKE(1024+X),156:NEXT
16 FOR X=199 TO 211 STEP2:POKE(1024+X),172:NEXT
17 FOR X=231 TO 247 STEP2:POKE(1024+X),172:NEXT
18 FOR X=263 TO 275 STEP2:POKE(1024+X),172:NEXT
19 FOR X=295 TO 307 STEP 2:POKE(1024+X),156:NEXT
20 PRINT@237,CHR$(204);:POKE1269,252
21 POKE1237,156:POKE1271,156:POKE1301,156
22 POKE1277,50:POKE1278,48
23 PRINT@416,"your move general   press arrow"
24 POKE1444,32:POKE1449,32:POKE1457,32:POKE1458,32:POKE1465,32:POKE1459,60:POKE1
471,62
25 A$=INKEY$:IF A$=""THEN25
26 IF A$=CHR$(8) THEN 30ELSEIFA$=CHR$(10)THEN 33
27 IF A$=CHR$(94)THEN 36 ELSE IF A$=CHR$(9)THEN 39
28 IF A$="S" THEN 181
29 SOUND1,5:GOTO25
30 P=PEEK(G+1022)
31 IF P=156 THEN 32ELSE IF P=172 THEN 42 ELSE IF P=252 THEN 67 ELSE29
32 PRINT@G,CHR$(156);:PRINT@G-2,CHR$(204);:G=G-2:GOTO74
33 P=PEEK(G+1056)
34 IF P=156 THEN 35 ELSE IF P=172 THEN 48 ELSE IF P=252 THEN 68ELSE29
35 PRINT@G,CHR$(156);:PRINT@G+32,CHR$(204);:G=G+32:GOTO74
36 P=PEEK(G+992)
37 IF P=156 THEN 38 ELSEIFP=172 THEN 54 ELSEIF P=252 THEN69 ELSE29
38 PRINT@G,CHR$(156);:PRINT@G-32,CHR$(204);:G=G-32:GOTO74
39 P=PEEK(G+1026)
40 IF P=156 THEN 41 ELSE IF P=172 THEN60 ELSE IF P=252 THEN70 ELSE29
41 PRINT@G,CHR$(156);:PRINT@G+2,CHR$(204);:G=G+2:GOTO 74
42 P=PEEK(G+1020)
43 IF G+1022=1269 THEN 45 ELSE IF P=156 THEN 44 ELSE29
44 PRINT@G,CHR$(156);:PRINT@G-2,CHR$(156);:PRINT@G-4,CHR$(204);:S=S-1:G=G-4:B=B-
1:PLAY"O5T255CBAGFEDC":GOTO74
45 IF P=156 THEN 46 ELSE29
46 PRINT@G,CHR$(156);:PRINT@G-2,CHR$(252);:PRINT@G-4,CHR$(204);
47 S=S-1:Z=0:G=G-4:B=B-1:PLAY"O5T255CBAGFEDC":GOTO74
48 P=PEEK(G+1088)
49 IF G+1056=1269 THEN 51 ELSEIF P=156 THEN50 ELSE29
50 PRINT@G,CHR$(156);:PRINT@G+32,CHR$(156);:PRINT@G+64,CHR$(204);:S=S-1:G=G+64:B
=B-1:PLAY"O5T255CBAGFEDC":GOTO74
51 IF P=156 THEN 52 ELSE29
52 PRINT@G,CHR$(156);:PRINT@G+32,CHR$(252);:PRINT@G+64,CHR$(204);
53 S=S-1:Z=0:G=G+64:B=B-1:PLAY"O5T255CBAGFEDC":GOTO74
54 P=PEEK(G+960)
55 IF G+992=1269 THEN 57 ELSEIF P=156 THEN 56 ELSE29
56 PRINT@G,CHR$(156);:PRINT@G-32,CHR$(156);:PRINT@G-64,CHR$(204);:S=S-1:G=G-64:B
=B-1:PLAY"O5T255CBAGFEDC":GOTO74
57 IF P=156 THEN58 ELSE 29
58 PRINT@G,CHR$(156);:PRINT@G-32,CHR$(252);:PRINT@G-64,CHR$(204);
59 Z=0:G=G-64:S=S-1:B=B-1:PLAY"O5T255CBAGFEDC":GOTO74
60 P=PEEK(G+1028)
61 IF G+1026=1269 THEN 64 ELSEIF P=156 THEN62 ELSEIF P=252 THEN63 ELSE29
62 PRINT@G,CHR$(156);:PRINT@G+2,CHR$(156);:PRINT@G+4,CHR$(204);:S+S-1:G=G+4:B=B-
1:PLAY"O5T255CBAGFEDC":GOTO74
63 PRINT@G,CHR$(156);:PRINT@G+2,CHR$(156);:PRINT@G+4,CHR$(204);:S=S-1:B=B-1:T=T+
1:PLAY"O5T255CBAGFEDC":GOTO71
64 IF P=156 THEN 65 ELSE29
65 PRINT@G,CHR$(156);:PRINT@G+2,CHR$(252);:PRINT@G+4,CHR$(204);
66 S+S-1:Z=0:G+G+4:B=B-1:PLAY"O5T255CBAGFEDC":GOTO74
67 PRINT@G,CHR$(156);:PRINT@G-2,CHR$(204);:T=T+1:GOTO71
68 PRINT@G,CHR$(156);:PRINT@G+32,CHR$(204);:T=T+1:GOTO71
69 PRINT@G,CHR$(156);:PRINT@G-32,CHR$(204);:T=T+1:GOTO71
```

```
70 PRINT@G,CHR$(156);:PRINT@B+2,CHR$(204);:T=T+1
71 FOR X=0TO555:NEXT:SOUND227,6:SOUND232,6:SOUND239,3:SOUND232,6:SOUND239,3:SOUN
D232,6:SOUND239,9
72 POKE1277,A:POKE1278,B:PRINT@416,"   THE GENERAL HAS WON AFTER":PRINT@448,"
    MAKING";T;"MOVES"
73 FORD=0 TO 5000:NEXT:GOTO163
74 '<C> J.D.B. 31/1/84 <C>
75 T=T+1:IF S=>10 THEN 77
76 IF S<10 THEN 79
77 A=49:POKE1277,A:POKE1278,B:IF B=48 THEN B=58
78 GOTO80
79 A=48:POKE1277,A:POKE1278,B:IF B=48 THEN B=58
80 FOR X=416 TO447:PRINT@X,CHR$(224);:NEXT
81 IFS=3 THEN71
82 SP=0
83 POKE1445,32
84 PRINT@416,"which";:PRINT@422,"soldier";
85 INPUTD$
86 IF D$="A1" OR D$="1A" THEN SP=167 ELSEIF D$="B1" OR D$="1B" THEN SP=199
87 IF D$="C1" OR D$="1C" THEN SP=231 ELSEIF D$="D1" OR D$="1D" THEN SP=263
88 IF D$="E1" OR D$="1E" THEN SP=295 ELSEIF D$="A2" OR D$="2A" THEN SP=169
89 IF D$="B2" OR D$="2B" THEN SP=201 ELSEIF D$="C2" OR D$="2C" THEN SP=233
90 IF D$="D2" OR D$="2D" THEN SP=265 ELSEIF D$="E2" OR D$="2E" THEN SP=297
91 IF D$="A3" OR D$="3A" THEN SP=171 ELSEIF D$="B3" OR D$="3B" THEN SP=203
92 IF D$="C3" OR D$="3C" THEN SP=255 ELSEIF D$="D3" OR D$="3D" THEN SP=267
93 IF D$="E3" OR D$="3E" THEN SP=299 ELSEIF D$="A4" OR D$="4A" THEN SP=173
94 IF D$="B4" OR D$="4B" THEN SP=205 ELSEIF D$="C4" OR D$="4C" THEN SP=237
95 IF D$="D4" OR D$="4D" THEN SP=269 ELSEIF D$="E4" OR D$="4E" THEN SP=301
96 IF D$="A5" OR D$="5A" THEN SP=175 ELSEIF D$="B5" OR D$="5B" THEN SP=207
97 IF D$="C5" OR D$="5C" THEN SP=239 ELSEIF D$="D5" OR D$="5D" THEN SP=271
98 IF D$="E5" OR D$="5E" THEN SP=303 ELSEIF D$="A6" OR D$="6A" THEN SP=177
99 IF D$="B6" OR D$="6B" THEN SP=209 ELSEIF D$="C6" OR D$="6C" THEN SP=241
100 IF D$="D6" OR D$="6D" THEN SP=273 ELSEIF D$="E6" OR D$="6E" THEN SP=305
101 IF D$="A7" OR D$="7A" THEN SP=179 ELSEIF D$="B7" OR D$="7B" THEN SP=211
102 IF D$="C7" OR D$="7C" THEN SP=243 ELSEIF D$="D7" OR D$="7D" THEN SP=275
103 IF D$="E7" OR D$="7E" THEN SP=307 ELSEIF D$="B8" OR D$="8B" THEN SP=213
104 IF D$="C8" OR D$="8C" THEN SP=245 ELSEIF D$="D8" OR D$="8D" THEN SP=277
105 IF D$="C9" OR D$="9C" THEN SP=247 ELSEIF SP=0 THEN 107
106 GOTO108
107 SOUND1,5:T=T-1: GOTO 74
108 FORX=416 TO 434:PRINT@X,CHR$(224);:NEXT
109 POKE1459,60:POKE1471,62:POKE1465,32
110 PRINT@436,"press";:PRINT@442,"arrow";
111 B$=INKEY$:IF B$="" THEN 111
112 IF B$=CHR$(8) THEN115 ELSEIF B$=CHR$(10)THEN129
113 IF B$=CHR$(94) THEN142 ELSEIF B$=CHR$(9) THEN155
114 SOUND 1,5:GOTO80
115 FOR X=435 TO 447:PRINT@X,CHR$(224);:NEXT
116 IF Z=1 THEN 122
117 L=PEEK(1024+SP):M=PEEK(1022+SP)
118 IF L=172 AND M=156 THEN119 ELSEIF L=172 ANDM=252 THEN 121 ELSE114
119 PRINT@SP,CHR$(156);:PRINT@SP-2,CHR$(172);
120 GOTO23
121 PRINT@SP,CHR$(156);:PRINT@SP-2,CHR$(172);:Z=1:GOTO23
122 IF SP+1024=1269 THEN 126
123 L=PEEK(1024+SP):M=PEEK(1022+SP)
124 IF L=172 AND M=156 THEN 125 ELSE114
125 PRINT@SP,CHR$(156);:PRINT@SP-2,CHR$(172);:Z=1:GOTO 23
126 L=PEEK(1024+SP):M=PEEK(1022+SP)
127 IF L=172 AND M=156 THEN 128 ELSE114
128 PRINT@SP,CHR$(252);:PRINT@SP-2,CHR$(172);:Z=0:GOTO 23
129 FOR X=435 TO 447:PRINT@X,CHR$(224);:NEXT
130 IF Z=1 THEN 135
131 L=PEEK(1024+SP):M=PEEK(1056+SP)
132 IF L=172 AND M=156 THEN 133 ELSEIF L=172 AND M=252 THEN 134 ELSE114
133 PRINT@SP,CHR$(156);:PRINT@SP+32,CHR$(172);:GOTO 23
134 PRINT@SP,CHR$(156);:PRINT@SP+32,CHR$(172);:Z=1:GOTO 23
135 IF SP+1024=1269 THEN 139
```

DRAGON PROGRAM

```
136 L=PEEK(1024+SP):M=PEEK(1056+SP)
137 IF L=172 AND M=156 THEN 138 ELSE114
138 PRINT@SP,CHR$(156);:PRINT@SP+32,CHR$(172);:Z=1:GOTO 23
139 L=PEEK(1024+SP):M=PEEK(1056+SP)
140 IF L=172 AND M=156 THEN 141 ELSE114
141 PRINT@SP,CHR$(252);:PRINT@SP+32,CHR$(172);:Z=0:GOTO23
142 FOR X=435 TO 447:PRINT@X,CHR$(224);:NEXT
143 IF Z=1 THEN 148
144 L=PEEK(1024+SP):M=PEEK(992+SP)
145 IF L=172 AND M=156 THEN 146 ELSEIF L=172 AND M=252 THEN 147 ELSE114
146 PRINT@SP,CHR$(156);:PRINT@SP-32,CHR$(172);:GOTO23
147 PRINT@SP,CHR$(156);:PRINT@SP-32,CHR$(172);:Z=1:GOTO23
148 IF SP+1024=1269 THEN 152
149 L=PEEK(1024+SP):M=PEEK(992+SP)
150 IF L=172 AND M=156 THEN 151 ELSE114
151 PRINT@SP,CHR$(156);:PRINT@SP-32,CHR$(172);:Z=1:GOTO 23
152 L=PEEK(1024+SP):M=PEEK(992+SP)
153 IF L=172 AND M=156 THEN 154 ELSE114
154 PRINT@SP,CHR$(252);:PRINT@SP-32,CHR$(172);:Z=0:GOTO23
155 FOR X=435 TO 447:PRINT@X,CHR$(224);:NEXT
156 IF Z=1 THEN 161
157 L=PEEK(1024+SP):M=PEEK(1026+SP)
158 IF L=172 AND M=156 THEN 159 ELSEIF L=172 AND M=252 THEN 160 ELSE114
159 PRINT@SP,CHR$(156);:PRINT@SP+2,CHR$(172);:GOTO23
160 PRINT@SP,CHR$(156);:PRINT@SP+2,CHR$(172);:Z=1:GOTO23
161 IF SP+1024=1269 THEN 165
162 L=PEEK(SP+1024):M=PEEK(1026+SP)
163 IF L=172 AND M=156 THEN 164 ELSE114
164 PRINT@SP,CHR$(156);:PRINT@SP+2,CHR$(172);:Z=1:GOTO 23
165 L=PEEK(1024+SP):M=PEEK(1026+SP)
166 IF L=172 AND M=156 THEN 167 ELSE114
167 PRINT@SP,CHR$(252);:PRINT@SP+2,CHR$(172);:Z=0:GOTO23
168 CLS:PRINT@96,"A SOLDIER IS REPRESENTED BY   ";CHR$(175)
169 PRINT:PRINT"THE GENERAL IS REPRESENTED BY ";CHR$(207):PRINT:PRINT"THE CAMP I
S REPRESENTED BY    ";CHR$(255):PRINT:PRINT"EMPTY SQUARES ARE SHOWN BY    ";CHR$
(159):PRINT:PRINT:PRINT"   press any key to continue"
170 A$=INKEY$:IF A$="" THEN 170
171 CLS:PRINT:PRINT"PERMITTED MOVES ARE UP,DOWN,LEFTAND RIGHT.THE GENERAL ALWAYS
HASTHE FIRST MOVE WHICH IS A TAKINGMOVE.HE MOVES AROUND THE BOARD  (BY PRESSING
THE ARROW KEYS)ONE SQUARE AT A TIME,OR TWO IF HE ISTAKIND A SOLDIER.JUMPED SOLD
IERS";
172 PRINT"ARE REMOVED FROM THE BOARD.":PRINT"HIS OBJECTIVE IS TO REACH THE   SAF
ETY OF THE CAMP AND TO CLAIM VICTORY.IF HIS PATH IS BLOCKED  HE MUST PRESS 'S' T
O SURRENDER.":PRINT:PRINT"   press any key to continue"
173 A$=INKEY$:IF A$="" THEN 173
174 CLS:PRINT:PRINT" THE SOLDIERS CAN ONLY MOVE ONE SPACE AT A TIME.THEIR OBJECT
IVE IS TO PREVENT THE GENERAL MOVINDINTO THE CAMP.THEY DO THIS BY   CROWDING HIM
INTO A CORNER OR BYSURROUNDING HIM 2 DEEP SO HE"
175 PRINT"CANNOT MOVE.IF THE GENERAL JUMPS17 SOLDIERS HE AUTOMATICALLY    WINS B
ECAUSE THE SOLDIERS LEFT  CANNOT PREVENT HIM FROM REACHINGTHE CAMP.":PRINT:PRINT
"   press any key to continue"
176 A$=INKEY$:IF A$="" THEN 176
177 CLS:PRINT:PRINT"SOLDIERS ARE MOVED BY INPUTTING THEIR BOARD POSITIONS (EG.'C
7'or'7C') PRESSING <ENTER> AND THEN PRESSING THE REQUIRED ARROW KEY.":PRINT:PRIN
T
178 PRINT"   press any key to continue"
179 A$=INKEY$:IF A$=""THEN 179
180 GOTO4
181 SOUND147,11:SOUND133,11:SOUND125,11:SOUND108,11:SOUND89,11
182 PRINT@416,"   THE GENERAL HAS SURRENDERED":PRINT@448,"AFTER";T;"MOVES":FOR X
=0 TO 5000:NEXT
183 CLS:PRINT@201," PLAY AGAIN Y/N ";
184 A$=INKEY$:IF A$=""THEN184
185 IF A$<>"Y" THEN 186 ELSERUN
186 CLS:END
```

Fast-action fun

Here's a selection of the latest arcade games for you to savour. Read the advice of our experts to help you decide

Floorway
TI-99/4A £7

Stainless, 10 Alstone Rd, Stockport, Cheshire

This is a difficult and intriguing game for the unexpanded TI You must collect eight gems that are located along the screen Only when all have been recovered can you enter the transporter that takes you on to a different layout

The problem is how to reach the gems There seems to be only one route possible

Bricks are safe enough to walk on, but footrests have the alarming habit of starting to disappear while you are standing on them Loitering too long on these may mean you are unable to use them on a planned return visit

If all this weren't overwhelming enough, another factor is involved — your oxygen supply A meter at the top of the screen indicates oxygen consumption Should this run out before you reach the transporter, or you fall too far, then it's back to the beginning yet again

There are two versions of the game on tape One uses the keyboard to control movement the other requires a joystick each works adequately **J.W**

instructions	90%
playability	75%
graphics	80%
value for money	90%

★ ★ ★ ★

Meltdown
48K Spectrum
£5.95

Kenan, 29 Grsburn Rd, Hessle, Hull HU13 9HZ

Gone are the days when working for Acme meant you sold brushes door to door In this offering you are working for Acme Nuclear Reactors, servicing reactors on the planet Haras

A reactor has leaked and spread radioactive coolant through the nine rooms of the installation Wearing a jet-propelled spacesuit, your task is to collect the coolant and return it to the centre room, at which point radiation levels will return to normal

You are hampered by two alien life forms, Sdog, which is indestructible and therefore you just get out of its way and Slab which you can shoot

There is also floating debris which can hole your suit so that you die instantly from radiation penetration

The graphics are good, and I particularly liked the electrical zap room Good use is also made of sound My major criticisms are that there is no joystick option, no points system or hall of fame and I found the sprites moved a little too slowly for my liking **M B**

instructions	85%
playability	85%
graphics	90%
value for money	85%

★ ★ ★ ★

The Bag Rounder/ Food of the Gods
TI-99/4A £7

Stainless, 10 Alstone Rd, Stockport, Cheshire

These two games are described as being suitable for the youngest member of the family (though how young is not specified), or the arcade novice Both are very similar but The Bag Bounder is the easier of the two

In both, the screen shows a cross section of floorways with one-way or two-way ladders or simply a tunnel for access to each floor Various nasties guard the objects that you seek In Bag Bounder this is bags of money and in Food of the Gods you collect hearts stolen by an evil god

The keyboard controls your movement S and D keys control walking left and right and the spacebar is used to jump When it comes to using ladders, however, you must find the correct key, which can be any of these, to take you up or down This seems to be different for each location While you are fumbling about, the resident monster has time to catch and gobble you up

This peculiarity with the key movements is described as encouragement for the habit of self discovery, essential to all aspects of learning I found it irritating and ultimately boring **J.W**

instructions	80%
playability	40%
graphics	50%
value for money	50%

★ ★

Enduro
48K Spectrum
£7.99

Activision, 15 Harley Hse, Mary lebone St, London NW1

Enduro is a car race which starts in one of the states of America, and finishes up in the same place

According to the description on the package you go through Baja's scorching desert sands, through Montana, Tennessee, New England, and back again You don't accomplish this in one day of course, you do get a sense of driving through the night, as well as through the day

The usual control options are offered to you, and they are very simple left/right brake/faster The road and the scenery scroll towards you, thus giving the impression that the car is moving forwards It's similar to those large test-your-driving skill machines in amusement arcades

If you bump into another car you don't disintegrate, you just get slowed down for a while I found it interesting at first but after half an hour I had had enough, it began to get boring

The graphics are nothing special, but everything does move smoothly, and the response to the controls is positive Playable, but not addictive **B B**

instructions	100%
playability	85%
graphics	80%
value for money	75%

★ ★ ★

River Raid
48K Spectrum
£7.99

Activision, 15 Harley Hse, Mary lebone Rd, London NW1

You are in a low flying aircraft, and your mission is to destroy all the bridges you come to whilst following the path of a river

This is one of the few times that I wish I had a joystick, although the keyboard controls are simple The reason for this is that I got so involved that my fingers became numb after about two hours, just using left/right and fire

The scenery scrolls towards you, giving you the impression of moving forwards All the time you are blasting bridges, the enemy is after you with aircraft, tanks ships and balloons

Of course you soon run out of fuel so you have to find fuel dumps in the river and fly over them Some of the hazards are very cleverly placed, if you miss them you hit your fuel dump The further up river you get, the more dangers you face including very narrow river banks

The graphics are ordinary ships tanks, etc, and everything works smoothly, I found it a very addictive game As soon as my fingers have recovered I am going to try again **B B**

instructions	100%
playability	100%
graphics	80%
value for money	90%

★ ★ ★ ★ ★

Interactive games on the Spectrum

Want to know how to redefine existing characters? HCW regular David Nowotnik shows you how

According to the Sinclair handbook despite the complex layout of the display file, interactive games are easy, as you can detect a character at any screen position with the function SCREEN$. However, what the handbook doesn't tell you is that this function will only detect characters in the Spectrum's existing character set. SCREEN$ does not work with user-defined characters which, if you want your game to look good on the screen, are just the characters you will want to detect.

Fortunately, there is a relatively easy solution to this problem: redefine some of the existing characters to the characters you want. How? Read on and I'll explain.

The Spectrum's character set (the data which defines which dots are INK and which are PAPER) exists in ROM. You can't change them in ROM, but what you can do if you want to alter some is to transfer this data to a safe place in RAM, where they can be altered, and change a system variable which is called CHARS in the handbook. This system variable tells the computer where to start looking for the dot pattern when PRINTing a character on the screen.

The first thing you must do is create a safe place in RAM to store the character set. This can be done by lowering RAMTOP, but this will be different for 16K and 48K machines. The following instructions are for the 48K Spectrum: if a different value is required for the 16K Spectrum, this is shown in square brackets. Lower RAMTOP with the direct command

```
CLEAR 64599 [31831].
```

This will leave enough space for the normal and UDG character sets. Now copy the character set from ROM to the safe area with

```
10 LET x = 64600 [31832]
20 FOR i = 15616 TO 16383
30 POKE x, PEEK i
40 LET x=x+1: NEXT i
```

Finally alter [illegible]

You can use the following short routine to redefine any character of ASCII code between 32 and 127 with the following routine, you enter your column of numbers one at a time, from the top down.

```
10 INPUT "Enter character
   code", x
20 LET x=x+64334 [31576]
30 FOR i=0 TO 7
40 INPUT y
50 PRINT i,y
60 POKE x+i,y
70 NEXT i
```

You could, if you so desired, alter all 96 of the existing character set, then return the computer to the original set with the commands

```
POKE 23606,0
POKE 23607,60
```

CHARS with the commands:

```
POKE 23606,88
POKE 23607,251 [123]
```

All should appear quite normal, except that your Spectrum is now accessing the copied character set every time something is printed on the screen. You can now redefine any character you want.

The easiest way to do this is to use a special program designed for that purpose or design your characters manually.

Take a sheet of paper and draw an 8 x 8 grid. Decide which squares will be "on" and which will be "off" in your new character. Mark those "on" with a cross. When you have finished, work along each row of the character, and assign the following value to a box if it is "on".

Add up the total for each row and write that value alongside the row. In the above example, dots with the value 64, 16, 2, and 1 are "on" therefore the row total is (64 + 16 + 2 + 1) = 83. When you have finished, you should have eight numbers all within the range 0 to 255.

128	64	32	16	8	4	2	1	
	X		X			X	X	= 83

Dive, dive, dive!

David Hughes' program about submarine warfare takes you down beneath the surface of the Interface straits, hunted by enemy shipping

In this game you command your own submarine, called the Spectrum. Your task is to intercept enemy shipping in the Interface straights. You are armed with ten torpedoes (five per tube) and your mission is terminated when all your ammunition is exhausted.

The difficulty of the game lies in the fact that you must judge the range and speed of your targets, which vary in length from eight to 40 pixels long. You must also check each craft for flags: your friends have flags and your enemies don't.

The score gained by sinking enemy craft depends on their range. If one escapes then you lose 50 points. If you sink an allied craft then you lose points equivalent to twice the points you would have gained if it had been an enemy ship.

A good score is anything over 500 points. If you reach 600 you're doing really well.

Programming hints

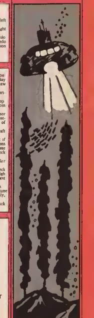
1. REM statements. Loop and sub-routine headings in upper case, REM notes in lower case
2. Ship bows (2030 and 2110) graphics A in inverse video mode bows (2160) Graphics B in inverse video mode
3. Submarine's bows (9510) inverse video mode, graphics A, 2 x space B, and adding two extra spaces for each line
4. The two space prints, line 1120, are five and four spaces respectively
5. POKE 23607,49 scrambles print giving explosion effect. Character set restored by POKEing 23607,60

Variables

hsc highest score
sc score
t1 number of torpedoes in left hand tube
t2 number of torpedoes in right hand tube
L position of left hand torpedo
R position of right hand torpedo
h horizontal craft position (RND)
s craft selection (RND)
f flag selection (RND)

How it works

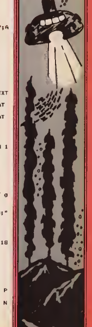
40-60 initial game preparation establish high score display instructions, set UDG, draw bows
70-90 set individual game variables, fill torpedo racks
100-200 game supervisor loop check score, specify random elements
1000-2000 secondary supervisor loop sort all random features, call for execution of sub-routines
2000-2220 sub-routines for craft assembly
3000-3500 subroutine check if torpedo is fired, report when each tube empty, update torpedo rack display, check for hits
3600-3990 sub-routine for explosion, update score
4000-4500 finish routine check current score against high score, clear screen for next game
5000-5250 sound sub-routines
8000-8090 instruction sub-routine
9000-9250 graphic assembly, report strings routines
9400-9640 draw torpedo rack and bows of submarine



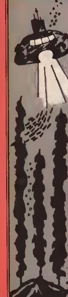
```
   5 REM     CRAFT AHOY

  10 REM -------------------
  20 REM      D.G.HUGHES
  30 REM   9th. JUNE 1984
  40 LET hsc=0: CLS : GO SUB 8000: REM inst
  50 BO SUB 9000: REM u/d gr
  60 BO SUB 9500: REM draw
  70 LET L=17: LET R=17: LET t1=5: LET t2=5
  80 BO SUB 9400: REM torps
  90 LET sc=0
 100 REM MAIN LOOP
 110 LET h=INT (RND*8)+1: LET s=INT (RNO*5): LET f=INT
(RNO*2)
 120 IF t1<=0 AND t2<=0 THEN  BO TO 4000: REM finish
 130 IF sc<=-999 THEN  BO TO 70
 140 PRINT AT 21,6;"    ";AT 21,0;"SCORE=";sc;AT 21,22;
"HI-SC=";hsc
 150 BO SUB 1000: REM ship
 200 BO TO 100: REM LOOP END
```

```
1000 REM SECONDARY LOOP
1010 FOR n=0 TO 27: LET d=0
1040 GO SUB 3000: REM shoot
1050 IF L<17 THEN  GO SUB 3250: REM l/h torp
1060 IF R<17 THEN  GO SUB 3450: REM r/h torp
1070 IF f=0 AND s<=2 THEN  PRINT AT h,n+1;" "; INK 0;"C
"
1080 IF f=0 AND s>2 THEN  PRINT AT h,29-n; INK 0;"C"; I
NK 1;" "
1090 GO SUB s*50+2000: REM craft
1100 NEXT n
1110 FOR q=0 TO 3
1120 PRINT AT h+q,0;"     ";AT h+q,28;"    "
1130 NEXT q
1140 IF f=1 THEN  LET sc=sc-50: PRINT  INK 1;AT 0,0;r$(
3, TO 31)
1150 IF f=0 AND n>20 THEN  PRINT AT 0,0;r$(4, TO 32)
1200 RETURN : REM 2nd.LOOP END
2000 REM CRAFT
2010 PRINT  INK 1;AT h+1,n;" "; INK 7;" AB"
2020 PRINT  INK 1;AT h+2,n;" "; INK 7; PAPER 5;"A██B"
2030 PRINT  INK 1;AT h+3,n;" "; INK 2; PAPER 5;"████A"
2040 RETURN
2050 PRINT  INK 1;AT h,n;" "; INK 0;AT h,n+3;"O": IF f=
1 THEN  PRINT AT h,n+1;"  "
2060 PRINT  INK 1;AT h+1,n;" "; INK 0;"▄▄▄█▄▄▄"; OVER 1;
AT h+1,n+3;"="
2070 IF n>24 THEN  PRINT AT h+2,0;"  "
2090 RETURN
2100 PRINT  INK 1;AT h+1,n;" "; INK 4;" ▄▛B"
2110 PRINT  INK 1;AT h+2,n;" "; INK 3;"█████A"
2115 IF n>24 THEN  PRINT AT h+3,0;"  "
2120 RETURN
2150 PRINT  INK 2;AT h+1,27-n;" FGB "; INK 1;" "
2160 PRINT  INK 3;AT h+2,27-n;"B█████"; INK 1;" "
2190 RETURN
2200 PRINT  INK 0;AT h+1,29-n;"H"; INK 1;" ": PAUSE 10:
 PRINT  INK 0;AT h+1,29-n;"I": PAUSE 5
2220 RETURN
3000 REM SHOOT
3010 IF INKEY$="1" AND t1>0 AND L=17 THN  GO TO 3200
3020 IF INKEY$="0" AND t2>0 AND R=17 THEN  GO TO 3400
3030 RETURN
3200 GO SUB 5200: REM sound
3220 LET t1=t1-1: IF t1<=0 THEN  PRINT AT 18,1;"PORT TU
BE";AT 19,3;"EMPTY": LET t1=0: BEEP .1,30
3230 PRINT  OVER 1; INK 2;AT 21,11+t1;"█"
3250 IF ATTR (L-2,13)<>105 THEN  LET m=13: LET LR=L: GO
 TO 3600
3260 LET L=L-1: IF L<=1 THEN  LET L=17: RETURN
3270 PRINT AT L,13;" ";AT L-1,13;"E"
3280 IF L<3 THEN  PRINT AT 1,13;" "
3300 RETURN
3400 GO SUB 5200: REM sound
3420 LET t2=t2-1: IF t2<=0 THEN  PRINT AT 18,22;"STARBO
ARD";AT 19,22;"TUBE EMPTY": LET t2=0: BEEP .1,30
3430 PRINT  OVER 1; INK 2;AT 21,20-t2;"█"
3450 IF ATTR (R-2,18)<>105 THEN  LET m=18: LET LR=R: GO
 TO 3600
3460 LET R=R-1: IF R<=1 THEN  LET R=17: RETURN
```

```
3470 PRINT AT R,18;" ";AT R-1,18;"E" .
3480 IF R<3 THEN  PRINT AT 1,18;" "
3500 RETURN
3600 REM HITG
3610 PRINT AT LR-1,m;" "
3620 POKE 23607,49
3630 PRINT  PAPER 3; INK 6; FLASH 1;AT LR-2,m-1;"XXX";A
T LR-3,m;"X";AT LR-4,m;"X"
3640 FOR m=0 TO 3
3650 FOR n=0 TO 7: BORDER n: NEXT n
3660 BEEP .05,RND*-40
3670 NEXT m
3680 POKE 23607,60
3690 PAUSE 10: BORDER 1: GO SUB 5100: REM sound
3920 FOR k=12 TO 0 STEP -1: FOR j=0 TO 31 STEP 4
3930 PRINT AT k,j;"    ": NEXT j: NEXT k
3940 PAPER 5: INK 1: LET L=17: LET R=17
3950 FOR n=0 TO 16: PRINT AT n,13;" ";AT n,18;" ": NEXT
 n
3960 IF f=1 THEN  LET sc=sc+10*(10-h): PRINT  INK 1;AT
0,0;r$(1, TO 31)
3970 IF f=0 THEN  LET sc=sc-20*(10-h): PRINT  INK 1;AT
0,0;r$(2, TO 31)
3980 IF t1<=0 AND t2<=0 THEN  GO TO 4000
3990 GO TO 100
4000 REM FINISH
4020 IF sc>hsc THEN  LET hsc=sc: PRINT AT 10,3; FLASH 1
; INVERSE 1;" NEW HI-SCORE   WELL DONE "
4030 PRINT AT 21,5;"    ";AT 21,27;"    "
4040 PRINT AT 21,0;"SCORE=";sc;AT 21,22;"HI-SC=";hsc
4050 FOR g=1 TO 20
4060 PRINT  INK 7;AT 8,5+g; FLASH 1;g$(1,g)
4070 PAUSE 10: NEXT g
4080 PAUSE 500: FOR g=1 TO 20
4090 PRINT  INK RND*4;AT 8,5+g; FLASH 1;g$(2,g): NEXT g
4100 PAUSE 30
4110 FOR g=0 TO 15
4120 PRINT  INK 1;AT 8,g;" ";AT 10,31-g;" ";AT 8,31-g;"
 ";AT 10,g;" "
4130 PAUSE 10: NEXT g
4140 FOR g=0 TO 31
4150 PRINT  INK 1;AT 0,g;" ": NEXT g
4200 PRINT AT 18,1;"           ";AT 19,2;"          ";AT 18
,21;"          ";AT 19,21;"          "
4500 GO TO 70
5000 REM SOUND
5100 FOR u=0 TO 2: LET bp=35
5110 FOR b=.04 TO .005 STEP -.01
5120 LET bp=bp+5: BEEP b,bp: NEXT b:
5130 PAUSE 7: NEXT u
5170 IF f=0 THEN  FOR b=0 TO -30 STEP -10: BEEP .1,b: P
AUSE 15: NEXT b
5180 IF f=1 THEN  FOR b=0 TO 2: BEEP .05,10: PAUSE 7: N
EXT b: BEEP .5,5
5190 RETURN
5200 BEEP .01,50: BEEP .01,60: BEEP .01,50
5250 RETURN
8000 REM INST
8010 PRINT AT 1,1;"Craft  : SUBMARINE SPECTRUM ";AT 3,2
```



SPECTRUM PROGRAM



```
;"To    : THE COMMANDER "
8020 PRINT AT 5,1;"Mission:  To intercept and      dest
roy enemy shipping in       the Interface Straits until
     supplies are exhausted"
8030 PRINT AT 10,1;"Warning: Allied craft flag code
    *** diagonal ***"
8035 PRINT AT 13,1;"Firing Code:";AT 14,8;"1=L/N Tube :
0=R/H Tube";AT 15,8;"5 Torpedoes per tube"
8040 PRINT AT 17,7;"Press 's' to enter";AT 18,7;"Interf
ace Straits"
8050 PRINT AT 20,9;"Message  ends"
8060 IF INKEY$="e" OR INKEY$="S" THEN  PRINT AT 21,11;
FLASH 1; INK 2;" STANDBY ": RETURN
8090 GO TO 8060
9000 REM  GRAPHICS
9010 FOR n=144 TO 152
9020 FOR j=0 TO 7: READ q
9030 POKE USR CHR$ n+j,q
9040 NEXT j: NEXT n
9050 DATA 1,3,7,15,31,63,127,255
9060 DATA 128,192,224,240,248,252,254,255
9070 DATA 0,0,31,79,103,115,121,0
9080 DATA 0,0,7,15,12,12,12,12
9090 DATA 24,60,0,60,60,60,24,60
9100 DATA 2,7,4,4,19,250,26,27
9110 DATA 24,60,24,24,8,24,60,60
9120 DATA 12,12,8,31,26,251,119,16
9130 DATA 48,48,32,48,56,251,125,1
9200 BRIGHT 1: INK 1: PAPER 5: BORDER 1: CLS
9210 DIM g$(2,20)
9220 LET g$(1, TO 20)="  G A M E  O V E R  "
9230 LET g$(2, TO 20)="N E W  M I S S I O N"
9240 DIM r$(4,32)
9250 LET r$(1, TO 32)="   SEND 'EM TO A WATERY GRAVE
"
9260 LET r$(2, TO 32)=" LOOK OUT' THAT WAS OUR ADMIRAL
"
9270 LET r$(3, TO 32)="  LOOK LIVELY YER LAND LUBBER
"
9280 LET r$(4, TO 32)="   THREE CHEERS FOR OUR NAVY
"
9290 RETURN
9400 REM TORPS
9410 FOR n=11 TO 20
9420 PRINT AT 21,n;"E": NEXT n
9440 RETURN
9500 REM DRAW BOWS
9510 CLS : PRINT AT 17,14;"A██B";AT 18,13;"A██████B";AT 1
9,12;"A████████B";AT 20,11;"A███████████B"
9520 PLOT 84,0: DRAW 0,12
9530 DRAW 36,36: DRAW 16,0,-PI/2
9540 DRAW 36,-36: DRAW 0,-12
9550 FOR n=120 TO 85 STEP -8
9560 PLOT n,n-80: DRAW 0,8
9570 PLOT 255-n,n-80: DRAW 0,8
9580 NEXT n
9610 PLOT 112,40: DRAW 0,3
9620 DRAW 8,8: DRAW 16,0,-PI/2
9630 DRAW 7,-7: DRAW 0,-3
9640 RETURN
```

Words and wings

Find out how good you are at the English language or save lives at 20,000 feet

Air Traffic Control
48K Spectrum
£9.95

Mikro-Gen, 44 The Broadway,
Bracknell, Berks

Though a substantial program, Air Traffic Control loads very quickly using Mikro Gen's Hyper Load facility. It is fascinating to watch, and interesting to play. It's a simulation of controlling a section of air space.

The planes are shown with a marker and their call signs on a simulated radar screen which overlays a map of the area. Beacons and air lanes and a danger area are also shown. You must give each plane it's own air space at a height and speed such that no collisions occur and then hand it on to the next sector.

Military aircraft which are not under your control cross your sector as do slow moving twin prop aircraft. You must ensure adequate separation, even when a 737 depressurises and has to drop in height.

Much more information such as destination and aircraft type is also given, so that even on level one your interest is held. Level nine is so crowded that not even a real controller could cope.

The package has a keyboard overlay and a manual which must be studied.

As absorbing as a flight simulator but different! **D.M**

instructions	95%
playability	100%
graphics	95%
value for money	90%

★ ★ ★ ★ ★

Scrabble
32K BBC £12.95

Leisure Genius, 3 Montagu Row,
London WH1 1AB

Have you ever come across a game that's so testing and so addictive that getting bored with it would require playing it twenty five hours a day, eight days a week?

Now you can play, without doubt, what must be the best game ever written for the BBC. It's not only great entertainment but also superbly presented, with one of the best instruction booklets I've ever seen.

No one needs reminding that Scrabble is a board game which involves the placing of letters on a chequered type board to form words, but all words must join others crossword style.

The computer has a vocabulary of over 8,000 words, and it proves a worthy opponent. There are four levels of skill: level 1 is beatable but level 4 is way above my standard, but is surprisingly fast at about one minute per move.

The Mode seven board takes some getting used to, but after a while you get to know it like the back of your hand.

Thanks, Leisure Genius, for a magnificent game that can only be described as next to perfect.

M.B

instructions	100%
ease of use	95%
display	95%
value for money	100%

★ ★ ★ ★ ★

CDA
Oric £5

NJH, 66 Dudley Rd, Brighton,
Sussex BN1 7GL

CDA is a rather simple character generator.

When the program is run, you are asked to enter the character you want to redefine. Here's the first snag. You can choose a normal ASCII character by pressing the appropriate character but to enter characters not directly available from the keyboard, you enter the ASCII code. This may sound reasonable if you could see what figures you're typing in. There's no cross reference so you must look up the ASCII code in the user's manual.

The editing isn't very sophisticated either. You design your characters in the usual cursor-on-a-grid fashion but there are many short-comings. For a start there is no wrap around and there are no useful facilities such as rotate, invert and clear. There is no facility for defining more than one character at a time either.

Perhaps the most frustrating part is that you cannot see your character in actual size as it is being edited and you are not given the necessary values for the redefined character. To top it all, you cannot save or load the redefined characters from within the program. **S.S.**

instructions	70%
ease of use	10%
display	30%
value for money	30%

★ ★

Kensington
CBM 64 £12.95

Leisure Genius, 3 Montagu Row,
London W1H 1AB

This is definitely a thinking man's game — no quick reflex, laser-zapping for arcade freaks. It is a board game which requires skill and strategy.

When first released, Kensington was billed as the best game since Monopoly. It failed to justify expectation. This computerised version doesn't really improve matters. Although, in all fairness, it does provide an opponent.

For those not familiar with the original game, the board/screen displays a number of interconnecting hexagons. In the first stages, counters are placed on the board. In the second stage players move the stones in an attempt to occupy the six points of a white hexagon, or a hexagon of their own colour.

The controls are a bit awkward and slow. It would be a good idea to make use of the joystick instead of the keyboard. Plenty of options are provided at the start for varying the game. Three levels of play are available, and the hardest plays a testing game.

Perhaps this version will appeal to board gamers, but it didn't really excite me. Despite attractive packaging, I found the price a bit steep. **T.M.H**

instructions	90%
ease of use	70%
display	75%
value for money	50%

★ ★ ★

Lingo
32K BBC £12.95

Complete Microcomputer Services, 32-38 Osnaburgh Street,
London NW1 3ND

I have often had the feeling that there should be more computer games for several players. This program is designed for one to four players, although the fascination of playing on your own is hard to see.

You are dealt, in a very long winded manner, 12 words from the computers' list, and you have to try to make these into a gramatically correct and meaningful English sentence.

You have a whole series of joining words and word endings available and you score by the complexity of the sentence you build.

Needless to say the computer can't understand your sentences, so your fellow players have to approve your work before scoring.

The sentences have to make sense but can be surreal, extraordinary or just plain silly. In short this is a word based game which would be better played using cards.

The only thing that the computer does well is provide a score. Everything else is made more complex by using the machine.

It might be fun the first time, but I cannot see anyone really spending an evening round the micro just to play this game.

D.C

instructions	85%
playability	40%
graphics	40%
value for money	40%

★ ★ ★

Crippled helicopter: can you survive?

This exciting game by Andrew Clarke stars you as the pilot battling against the elements. Can you stay the course?

You are the pilot of a crippled helicopter and you must land your hopper on one of the heli pads. Your fuel is running low and you are also hampered by the strong gravitational field which is pulling you to earth.

There are five spots where you can land and you will need to exercise all your skill in manoeuvring your helicopter. Be careful to monitor your speed: if it exceeds 20mph when you come in to land, you will blow up. Your craft will also be destroyed if you touch the planet's surface, if you run out of fuel or if your speed is greater than 100 whichever way you are travelling.

A read out next to the speed indicator will tell you whether your speed is good or high. You will have to use delicate joystick control to keep your speed [illegible]

Your speed increases when you go up or down but remember that gravity increases the pull on you when you are descending so you will move faster. The explosion routine in lines 400 to 410 is identical to the one used in Spaceship Nimbus by the same author.

These are your control keys: 1 up, left arrow down, 2 right, CTRL left, space fire (used to start game).

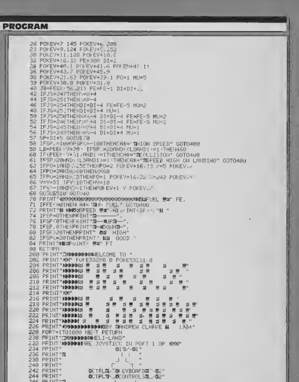
Variables

FE	fuel left
PT	points
DI	speed of descent
X	x position of heli-hopper
Y	y position of heli-hopper
SP	speed (for screen print-out)
MB	first sprite picture for explosion
MU	value for sound
PO	indicates if sprite is past the 255th x position
JS	joystick value
VO	volume
SU	sustain
AT	attack
WA	waveform
HF	high frequency
LF	low frequency
CA	cause for explosion

How it works

6-7	read in sprite data
8-39	set up sprites
40-56	read joystick
57	work out speed
58-61	check for collisions, and other faults that may lead to an explosion
62-65	control x positioning of sprite 1
66-67	POKE in position values
70-90	print screen data
200-226	title screen
300-340	print planet surface
400-410	explosion routine
450-454	message following explosion with reason for crash
460-466	message following landing
470-478	another GO? if crashed
480-488	another GO? if landed
490-490	high score
400-520	sound
38000-30052	sprite data

```
0 REM************************
1 REM***      HELI-LAND      ***
2 REM***         BY          ***
3 REM*** ANDY CLARKE    1984***
4 REM************************
5 POKE53280,0 POKE53281,0 GOSUB230
6 FORS=240TO246 FORT=0TO62 READW POKES*64+T,W NEXT NEXT GOSUB256
7 S=247 FORT=0TO62 POKES*64+T,0 NEXT FT=0
8 FORC=54272TO54296 POKEC,0 NEXT
10 V=53248
12 POKE2040,242 POKE2045,240
14 POKE2041,240 POKE2042,241
16 POKE2043,241 POKE2044,241 GOSUB500
18 MB=24[illegible] GOSUB200 GOSUB300
20 Y=22 X=50 POKEV+1,Y POKEV,X
22 POKEV+3,134 POKEV+2,48 POKEV+29,0
24 POKEV+5,140 POKEV+4,128
```



```
26 POKEV+7 145 POKEV+6,208
28 POKEV+9,124 POKEV+8,252
30 POKEV+11,188 POKEV+10,8
32 POKEV+16,32 FE=300 DI=2
34 POKEV+40,1 POKEV+41,6 POKEV+42,11
36 POKEV+43,7 POKEV+45,9
38 POKEV+21,63 POKEV+39,1 PO=1 MU=5
39 POKEV+30,0 POKEV+31,0
40 JS=PEEK(56321) FE=FE-1 DI=DI+.1
42 IFJS=247THENX=X+4
44 IFJS=251THENX=X-4
46 IFJS=254THENDI=DI-4 FE=FE-5 MU=2
48 IFJS=253THENDI=DI+4 MU=1
50 IFJS=250THENX=X-4 DI=DI-4 FE=FE-5 MU=2
52 IFJS=246THENX=X+4 DI=DI-4 FE=FE-5 MU=2
54 IFJS=245THENX=X+4 DI=DI+4 MU=1
56 IFJS=249THENX=X-4 DI=DI+4 MU=1
57 SP=DI*5 GOSUB70
58 IFSP>=100ORSP<=-100THENCA$="■HIGH SPEED" GOTO400
59 LD=PEEK(V+30) IFSP>=20AND(LDAND1)=1THEN460
60 IF(PEEK(V+31)AND1)=1THENCA$="■COLLISION" GOTO400
61 IFSP>20AND(LDAND1)=1THENCA$="■SPEED HIGH ON LANDING" GOTO400
62 IFPO=1ANDX>255THENPO=2 POKEV+16,23 X=5 POKEV,X
64 IFPO=2ANDX>60THENX=60
65 IFPO=2ANDX<5THENPO=1 POKEV+16,22 X=249 POKEV,X
66 Y=Y+DI IFY<10THENY=10
67 IFX>-1ANDY>-1THENPOKEV+1,Y POKEV,X
68 GOSUB510 GOTO40
70 PRINT"■■■■■■■■■■■■■■■■■■■■■FUEL ■■" FE,
71 IFFE<=0THENCA$="■NO FUEL" GOTO400
72 PRINT"■ ■■■SPEED ■■";HEX(INT(SP));"■ "
74 IFSP=0THENPRINT"■──────",
76 IFSP<0THENPRINT"■──■UP■──",
78 IFSP>0THENPRINT"■─■DOWN■─",
80 IFSP>20THENPRINT" ■■  HIGH"
82 IFSP<=20THENPRINT" ■■  GOOD "
84 PRINT"■■POINT- ■■" FT
90 RETURN
200 PRINT"■■■■■■■■WELCOME TO "
202 PRINT"■■" POKE53280 0 POKE53281,0
204 PRINT"■■■■■■ ■  ■ ■   ■   ■  ■ ■    ■     ■"
206 PRINT"■■■■■■ ■  ■ ■  ■ ■      ■ ■       ■ ■  "
208 PRINT"■■■■■■    ■  ■   ■    ■   ■      ■ ■ "
210 PRINT"■■■■■■  ■ ■ ■  ■  ■      ■  ■      ■  ■ "
212 PRINT"■■■■■■  ■ ■ ■   ■   ■   ■   ■ ■       ■"
214 PRINT"■■"
216 PRINT"■■■■■■ ■       ■  ■    ■   ■    ■  ■    ■ "
218 PRINT"■■■■■■ ■       ■ ■  ■ ■   ■ ■   ■ ■ ■ ■   ■ ■"
220 PRINT"■■■■■■  ■      ■     ■   ■  ■ ■ ■ ■  ■ ■ ■"
222 PRINT"■■■■■■  ■      ■   ■ ■ ■   ■ ■ ■ ■ ■  ■ ■ ■"
224 PRINT"■■■■■ ■   ■    ■   ■ ■ ■   ■  ■ ■ ■   ■  ■ "
226 PRINT"■■■■■■■■■■■■■■BY ■ANDREW CLARKE ■    1984"
228 FORT=1TO1000 NEXT RETURN
230 PRINT"■■■■■■■■HELI-LAND"
232 PRINT"■■■■■■■USE JOYSTICK IN PORT 1 OR ■■■"
234 PRINT"                  ■1■/\■1"
236 PRINT"■                  | |   "
238 PRINT"                  ┘ └    "
240 PRINT"                 ┌     ┐ "
242 PRINT"            ■CTRL■/‾■KEYBOARD■‾\■2"
244 PRINT"            ■CTRL■\_■CONTROLS■_/■2"
246 PRINT"■                └    ┘"
248 PRINT"                  ┐ ┌"
250 PRINT"                  | |"
252 PRINT"                  ■-■\/■-"
254 PRINT"■■■■■■■■■■ AND ■ ■SPACE■ ■ FOR ■ FIRE " RETURN
256 PRINT"■■■■■■■■■■■PRESS A KEY TO GO ON" FORT=1TO20 GETA$ NEXT
```

```
 58 IFPEEK(197)=64THEN[illegible]
 60 PRINT"▶▶▶▶▶▶THIS IS ▶HELI-LAND"
262 PRINT"▶▶▶▶▶▶——————————————"
264 PRINT"▶▶▶▶▶▶▶YOU ARE IN YOUR HELI[illegible]
266 PRINT"▶▶▶▶▶HOVER WITH ▶LOW FUEL ▶AND A S[illegible]
268 PRINT"▶▶▶▶▶GRAVITATIONAL FIELD PULLING YOU
270 PRINT"▶▶▶▶▶TOWARD THE ROCKY SURFACE OF"
272 PRINT"▶▶▶▶▶[illegible]H IN IT."
274 PRINT"▶▶▶▶▶▶▶YOU HAVE FIVE LANDING PLACES AND
276 PRINT"▶▶▶▶▶THEY ARE ▶YOUR ONLY HOPE."
278 PRINT"▶▶▶▶▶▶▶ON LANDING DO NOT EXCEED ▶[illegible]0 MPH,"
280 PRINT"▶▶▶▶▶▶▶NEVER EXCEED ▶100 MPH."
282 PRINT"▶▶▶▶▶▶▶DO NOT ▶TOUCH ▶THE ROCKS,"
284 PRINT"▶▶▶▶▶▶▶AND TRY NOT TO RUN OUT OF ▶FUEL."
290 PRINT"▶▶▶▶▶▶▶▶▶PRESS ▶A KEY ▶TO GO ON" FORT=1TO20 GETA$ NEXT
292 IFPEEK(197)=64THEN292
294 RETURN
300 PRINT"[illegible]" POKE53280,0 POKE53281,0
302 PRINT"—               /‾‾‾\ "
304 PRINT"  \                  \ "
306 PRINT"                    /              |"
308 PRINT"    —              / —    —        |"
310 PRINT"                     |    |  /     |"
312 PRINT"                                /  |"
314 PRINT"                      \   _|       |"
316 PRINT"                            —   —  |"
318 PRINT"    ——                     /       |"
320 PRINT"                                   "
322 PRINT"                     \    \        |
324 PRINT"                                   |
326 PRINT" |                                 "
328 PRINT"      —             /        \ /   "
330 PRINT"              ———          |___/"
340 RETURN
400 POKE2040,MB MB=MB+1 POKEV+[illegible]1 POKE +29,1
402 POKEHA,123 GOSUB410
404 [illegible]=15 IFMB=247THENPOKE2040,MB FORX=15TO0STEP-.1 POKEHF,4 POKEHF+7.5
406 POKE[illegible] IFMB=247THENMB=[illegible]GOTO450
408 FORD=1TO100 NE[illegible]
410 POKEHF+7,1 POKEHF,[illegible] RETURN
450 POKE[illegible]
452 PRINT"[illegible]
454 PRINT"▶▶▶▶[illegible]
456 PRINT"▶▶▶▶THE [illegible]
460 GOSUB5[illegible] POKE[illegible] PRINT"[illegible] IT [illegible] WELL ▶FINGERS▶!!" POKEV0,0
462 PRINT"▶▶▶▶[illegible] LANDED VERY WELL [illegible]
464 IF[illegible]=70[illegible]THENFT=FT+[illegible]
466 FT=FT+5 [illegible]
470 PRINT"▶▶▶▶PRE[illegible] FIRE TO [illegible] AGAIN
472 PRINT"▶▶▶▶[illegible]
474 GETA$ IFPEEK[illegible]
476 IFA$[illegible]N THEN474
478 PRINT"[illegible]▶▶▶▶▶BYE [illegible]
480 GOSUB[illegible] PRINT"▶▶▶▶PRE[illegible] FIRE [illegible] AGAIN
482 PRINT"▶▶▶▶[illegible]
484 GETA$ IFPEEK[illegible]THEN[illegible]
486 IFA$[illegible]THEN484
488 PRINT"[illegible]▶▶▶▶▶BYE [illegible]
490 IFFT[illegible]-THEN[illegible]=FT
492 PRINT"▶▶▶▶HIGHEST [illegible]
494 PRINT"▶▶▶▶YOUR [illegible] IS ▶ FT
496 RETURN
500 VO=542[illegible] HF=54[illegible] F=5427[illegible] AT=[illegible]
502 SU=54[illegible] WA=54[illegible]
504 POKEAT,[illegible] POKE[illegible]5 POKE[illegible]
506 POKEHT+[illegible] POKE[illegible]255 POKEWA+[illegible] RETURN
510 POKEVO,15 POKE[illegible] POKEHF[illegible] POKEHF+[illegible] RETURN
[illegible] FORK=1TO15 FOR[illegible]TO3[illegible] POKEF,K POKEHF,D NEXT NEXT POKEHF,0 RETURN
```

```
       255,0,
       *****HELI
     TA0,   255,
     TA24 64 2,24,
     TA24 4-,0,12,
       *****E  # 1
     TA4,2,0 66,4,0,
      A3,255 0,8,112
     TA2 1 0,4,0,128
     1 *****E' # 2
     TA1 4 0 17,64,0,
     ATAC,6- FA 1,0,128
      A8,0,16 16 0,0,40,
     REM *****E' # 3
30046 DATA4,16   0 0.0,0.0,0,4
30047 DATA0 4 32 1 0.0.0,0,4,0
30048 REM *****E' # 4
   50 DATA0,0,2,0,0,0,0,0,0,0          ,0,      ,0,0 0 0,0,0,  ,
                                  ,0,0,0,0,0.0,0,0,0,0,0,0,128,0,16
```

* * * * * * * * * * * *

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Jet Pac
BBC B £7.95

Ultimate, The Green, Ashby-de la-Zouch, Leics LE6 5JU

Ultimate's new game for the BBC sets a new standard in fast-moving graphics, and also in alien genocide! It is a game of the hovering spaceman genre

The idea of the game is to move an astronaut around the MODE 2 screen using a Jet-Pac to collect fuel and components for a spaceship in order to blast off to the next planet

The astronaut has a powerful laser gun with repeat-fire facility which can destroy aliens in flocks. This does not make the game easy, however, as there are lots of aliens and the Jet-Pac controls are very fast and responsive, making it difficult to control

Each planet contains a different type of alien, and according to the packaging there is a universe of planets. So far I have seen three!

Also on the planets are bonus objects such as gold bars and liquids, which float down the screen and stay for a few seconds before disappearing.

This is a fast, colourful arcade game with good graphics and excellent sound. I liked the opening music. Perhaps the game is a bit repetitive, but good fun to play overall **D A.**

instructions	70%
playability	68%
graphics	80%
value for money	75%

★ ★ ★ ★

Scandarally
TI-99/4A £3.50

Sofu, 14 Station Rd. Brough, N Humberside HU15 1DY

This is a car rally game which takes place in three stages. You guide a car down a forest path avoiding the trees and huts that scroll up the screen

Providing the car is not too damaged to continue, you then steer along a winding mountainous path before crossing water over a steep bridge. In the final part you drive along a crowded motorway, dodging the traffic

At the end of each stage the number of penalty points gained are shown. You have three cars with which to compete. Your final score depends on the number of stages completed and any bonuses awarded, minus all penalties.

At the end of the game a Hall of Fame shows the score and your place in it, but there is no best score feature incorporated.

The S and D keys control left and right movements of the car, but some numeric keys can control speed and cornering. I found trying to use these most difficult, partly because of not being very dextrous, but mainly because they do not work as expected

This game needs Extended BASIC **J W**

instructions	40%
playability	40%
graphics	70%
value for money	80%

★ ★ ★

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Pyjamarama
48K Spectrum
£6.95

Mikro-Gen, 44 The Broadway, Bracknell Berks

Add the plot of Jet Set Willy to graphics about four times the size, and much more detailed, and you get this pyjama drama featuring a sleep-walking Wally Weeks.

Using a variety of joysticks or definable keys, you must guide the bed-capped hero through the house avoiding multitudes of bouncing or spinning Whotsits, to find the alarm clock, which will wake him up in time for work.

As you progress, you find objects, only two of which can be carried, to aid you. These include keys to open locked doors. You are sustained by snooze energy which is lost when a Whotsit grabs you, and is restored by eating the food

If the plot's not original, then why buy it? First, it's cheaper, and second, these graphics really are super, with great detail and very smooth animation

My number one tester loved the way Wally can be made to slide down bannisters! An enormous variety of articles assail you, and in the Video Game room, there's even Space Invaders played with roast chicken, and knives and forks

Good fun, even if not original! **D.M**

instructions	80%
playability	100%
graphics	100%
value for money	85%

★ ★ ★ ★ ★

ZimSalaBim
CBM 64 £9.95

Melbourne Hse, Castle Yard, Richmond TW10 6TF

This is an adventure game set in Arabia

The top half of the screen is devoted to a hi resolution picture of the action. These pictures are not static but scroll smoothly across the screen as you move your character about

The object of the game is to carry out a raid on the Sultan's fortress and recover some stolen gold. You then return to the desert and locate a secret cave to return the gold to the village elders who are waiting there

Playing the game is a mixture of moving the character around the screen via the joystick or keyboard and entering two word commands. This is accompanied by mysterious music

This is a nicely thought out game for the apprentice adventurer. The range of text commands is not so vast that you spend hours at one point. The graphics help the realism and I like being able to use the joystick

The game uses a fast load system so it loads in only three minutes **L.C**

instructions	70%
playability	60%
graphics	80%
value for money	80%

★ ★ ★ ★

Kokotani Wilf
48K Spectrum
£5.95

Elite, 55 Bradford, Walsall WS1 3QD

Going in search of the pieces of a shattered Dragon Amulet, Kokotoni Wilf is the winged apprentice of the magician Ulrich

He has been transported back into a time when there were dinosaurs stalking the earth although these particular creatures are immobile, it's dangerous even to touch them.

He must dodge various flying creatures, and the obligatory spiders of course, and he wanders in and out of various locations, under your control

The controls are very simple, left-right and up, are all that are required, and Wilf moves smoothly in response

The plot may differ slightly, and the scenery is a little different to many, but the game follows the well worn path of previous graphic adventure games

Not, I hasten to add, that this game isn't playable: it is, but it's not what I would call addictive... not many are

Probably the best classification is that it is average in its class, which means that it is better than some, and worse than others **B B**

instructions	100%
playability	85%
graphics	85%
value for money	80%

★ ★ ★ ★

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HCW 30/10/84

Stop cheating

Having read Paula Le Page's letter in HW 84, I feel that I must reply to some of her comments

Firstly I would like to say that I agree whole heartedly with her view that the HCW letters page should not be turned into a cheats page by the people who can't complete the various adventure games that are always being mentioned. Surely it spoils the fun of a game if someone gives you all the answers and it stops you getting as much value for money out of your software When I've spent £5 or more on a game I'd rather do it myself, thank you

It also spoils the letters page for those HCW readers who don't want to cheat as some weeks there's nothing on the page I can read without it spoiling my fun by giving me the answers to one of my games

I must admit that I sometimes get fed up with the number of letters etc in HCW for TI 99/4A owners (I own a Spectrum 48K) but I can see their point I would be very worried about the future of my computing hobby if the Spectrum were ever to go out of production. However I do think there should be more of a balance in HCW, after all Spectrum owners are in the majority so it is quite logical to have more material for this brilliant computer than for any other and I think all reasonable people must agree with this

I think HCW is a great magazine and the only thing that needs changing is the letters page I want to see more interesting letters being published — like this one!

Henry O'Donovan, Torquay

Changing scene

I was very pleased to see (HCW 84) that at last your letters page has cut out the dross of how to cheat on various boring games It's much more interesting to read other people's points of view and I hope this will continue

You must admit, HCW, that your pages have been rather thin over the summer We're all looking forward to bumper Christmas issues like you released last year, and lots of reviews and even more reviews

I think that the computer has changed quite dramatically over the last year If you just think back to this time last year, everything's so different Not only have many software companies smartened up and improved their marketing — in short, become more professional — but all we common or garden users are also growing up a bit in what we like to buy or type in to our computers

Of course, we're going to miss the sparks of originality and the novelty, but I think it can only be for the good in the long run Amateur companies may be fun while it lasts, but once the industry has progressed as far as it now has, it's important to maintain some kind of credibility

If you want to know my forecast for the near future, I think that we users are going to get more and more sophisticated and utilities and business programs will dominate Of course there will always be the games freaks, and I admit that I enjoy playing games, but I think that there will be more and more snobbery — who's going to admit to spending hours and hours playing arcade games when serious users will be expanding their brains with graphics and utilities?

It will be interesting to see how all the computer magazines are going to react to the shift in the market There are so many computer magazines that it will be vital for them to adapt to cater for the public's needs Perhaps we'll see new magazines springing up which cater for the young (and the not so young) amateur programmers and even those who just like tinkering with their micros Can you imagine it — Your Utility or Utility Computing Weekly Perhaps we'll see those titles in the near future, who knows?

Chris Gibbon, Duford

A useless hobby?

I have a problem and I was wondering if any other HCW readers are having the same difficulties

I own a Commodore 84 which I got for my birthday last year and I spend quite a lot of time using it Now my parents say that I am wasting all my time playing games on it and that they never see me because when I come in from school I go straight to my Commodore and start using it They say that I am neglecting my school work and that I should be working for my 'O' Levels instead of mucking around on a useless hobby Do other readers find that their parents stand in the way of this excellent pastime or are I the only person with this problem?

I try to explain to them that I am spending my time usefully I am teaching myself to program and am getting quite good at it Computing is used in many jobs nowadays so I think that my hobby will help my career prospects too

What can I do to make my parents see that computers aren't a waste of time? They say that they wish they hadn't bought it for me

John Ramsbottom, Manchester

Belgian record?

I finished the fantastic game Sabre Wulf with a score of 355,720 points and 97 per cent of the game I suppose this is a continental record It took me two hours

Steven Harien (age 10), Belgium

Nutty about adventures

May I congratulate you on the continuing high standard of HCW Keep it up Perhaps a bigger space for adventure nuts, hint hint! (some *is* bigger than none)

If there are any CBM 64 owners/readers in my local area who would like to swap hints etc, then I would be delighted to get in contact I can offer some help with the following adventures, Hobbit, Heroes of Karn and any of the adventures published on 64 Tape Computing numbers 1, 2 and 4 These tapes, produced by Argus, are really great and at £3 99 are great value, considering that all four, so far, are packed with tips, hints, games, utilities etc, including adventures on the issues mentioned above I can recommend them to all 64 owners

If anyone else, either home or abroad wants to write with help, or just for the sake of writing, please do I will answer all mail I am 27 and will accept mail from any age group, providing they are 64 users and enjoy adventures

Ian Robertson 18 Cedar Hse, Spelthorne Grove, Sunbury, Middx

We have no connection with Mr Robertson and have not paid him to write flattering letters about Argus! Adventure buffs will be pleased to learn that we will shortly be featuring an adventure column, so write in with your problems or advice.

Thumbs down

I am writing to warn HCW readers of a new program from US Gold After being advertised as early as August, Nato Commander was finally available in October As there is a shortage of war simulation programs for the Commodore 64 I purchased it immediately

The instruction book mentions a demonstration mode this did not exist on my copy However, worst of all I find that there is no facility to play again on completion of a game It must be reloaded from the start which takes about five minutes, a situation which is obviously unacceptable

This lack of attention to detail is not what I have come to expect from US Gold who in my experience has produced excellent software in the past I for one, am sending my copy of Nato Commander back and demanding a refund I shall certainly be more careful when buying from them in the future and my advice to HCW readers is — save your money!!

Paul Nash, Cheadle Hulme

Shame on you!

You should be ashamed, HCW I'm referring to Bernadette Barron's letter (HCW 64)

The attitude that it's OK to copy software and records is rife When you buy a program, record or TV licence you pay for the right to use that information If you want to transfer that program, music or programme on to another medium it is within your legal right, so all those people who copy programs to disc and records to tape and video-record Blankety Blank aren't breaking the law if they do it for their own use

If they then give (or sell) the tape to someone else they are cheating the company who produced the goods out of the money which is their due In the case of video recordings this does not usually matter because most people who have a video recorder will have a TV licence and will have paid for the right to see the programme anyway However both music and software cost a lot of money to produce An average program may take three months to a year to develop the programmer has to be paid during that time, so that he can afford to eat, sleep and scratch his head at regular intervals If you pirate his game he does not get the money you owe him

A programmer gets about 15 per cent of the selling price of his game — there are huge costs involved in manufacturing, packaging, distributing and advertising software To recover costs it is necessary for the software house to sell more than 20,000 copies of each program If one title fails another has to subsidise this loss

The days of rich software houses and programmers driving Porsches are over and if you insist on stealing their work they won't be able to afford to produce the goods and you will suffer If people spend money producing a marketable item they are owed something for your use of it The argument that software is too expensive does not wash, there are many things I would like but can't afford but that does not give me the right to steal a mainframe!

Jerry Fowler, Croydon

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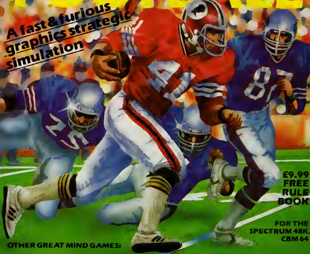

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5	Kokotoni Wilf	Elite	Spectrum (5)
6	Zaxxon	U S Gold	CBM 64 (4)
7	Jet Pac	Ultimate	Spectrum (8)
8	Football Manager	Additive	Spectrum (6)
9	Avalon	Hewson	Spectrum (7)
10	Decathlon	Activision	CBM 64(-)

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2	Twin Kingdom Valley	Spectrum (1)	
3	Lords of Midnight	Beyond	Spectrum (3)
4	Sherlock	Melbourne Hse	Spectrum (4)
5	World Cup Football	Artic	CBM 64 (2)
6	Star Trader	Bug-Byte	Spectrum (9)
7	Hampstead	Melbourne Hse	Spectrum (6)
8	ZimSalaBim	Melbourne Hse	CBM 64 (7)
9	Solo Flight	U S Gold	CBM 64 (8)
10	Hobbit	Melbourne Hse	CBM 64 (10)

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1	Sherlock	Melbourne Hse ( )
2	Beach Head	Centresoft (4)
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4	Avalon	Hewson ( )
5	Hampstead	Melbourne Hse (-)
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7	Jet Set Willy	S. Projects (5)
8	Full Throttle	Micromega (7)
9	Braxx Bluff	Micromega (-)
10	Night Gunner	Digital Integration (8)

COMMODORE 64

1	Jet Set Willy	S. Projects ( )
2	Chuckie Egg	A & F Software (-)
3	Zimsalabim (8)	Melbourne Hse ( )
4	Storm Warrior	K Tel (-)
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6	World Cup	Artic ( )
7	Scrabble	Leisure Genius (-)
8	Zaxxon	Centresoft (-)
9	Chiller	Mastertronic ( )
10	Beach Head	Centresoft (2)

DRAGON 32

1	Hunchback	Ocean (1)
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3	Hungry Horace	Melbourne Hse (-)
4	Mr Dig	Microdeal (-)
5	Cuthbert in Space	Microdeal (-)
6	Kriegspiel	Beyond (5)
7	Chuckie Egg	A & F (2)
8	Dragon Chess	Oasis Software (4)
9	Ring of Darkness	Wintersoft (5)
10	Eightball	Microdeal (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

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1	Duck Shoot	Mastertronic (2)
2	Computer War	Creative Sparks (1)
3	Punchy	Mr Micro ( )
4	Flight 015	Craig Comms (3)
5	War	Anirog (4)
6	Maze Gold	Visions (6)
7	Tank Commander	Creative Sparks (7)
8	Tower of Evil	Creative Sparks (-)
9	Jet Pac	Ultimate (5)
10	Crazy Kong	Interceptor (10)

BBC

1	Scrabble	Leisure Genius (6)
2	Kensington	Leisure Genius (7)
3	Pearl Harbour	Micro-Gen ( )
4	Frak	Aardvark ( )
5	Elite	Acorn (-)
6	Mini Office	Database ( )
7	Spitfire Command	Superior (3)
=	Castle of Gems	MRM ( )
9	Battle Tank	Superior (2)
10	Diamond Mine	MRM ( )

ZX81

1	Crazy Kong	PSS ( )
2	Walk the Plank	Novus (3)
3	Black Crystal	PSS (4)
4	Krypton Ordeal	Novus (2)
5	Espionage Island	Sinclair ( )
=	ZXTK	Bug-Byte (-)
=	Toolkit	Sinclair (-)
=	Chess II	Artic (-)
=	Vu-File	Sinclair (-)
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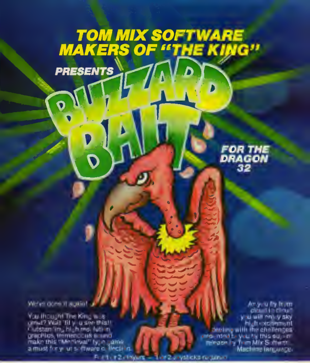

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